

**TEACHER FACTORS INFLUENCING ACADEMIC PERFORMANCE OF
SECONDARY SCHOOL STUDENTS IN PHYSICS: A STUDY OF SECONDARY
SCHOOLS IN BURETI SUB COUNTY, KERICHO COUNTY-KENYA**

**BY
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DECLARATION

Declaration by the candidate

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DEDICATION

I wish to thank almighty God for the strength He gave me to go through the entire course and in particular when working on this thesis. It is because of his blessings among them perseverance, good health, cognition, patience and resilience that enabled me to come through during my course. I would not forget to thank my family members for their moral, spiritual and financial support. To all I say God bless you.

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ABSTRACT

The purpose of this study was to examine teacher factors influencing academic performance of secondary school students in physics in Bureti Sub County, Kericho County. The choice of this topic was influenced by the fact that performance in physics in Kenya particularly secondary schools in Bureti Sub County has remained low over the last four years. The objectives of the research were: to assess the influence of teacher's commitment in physics syllabus coverage on academic performance among secondary schools students in physics; to determine the influence of teachers' preparedness on students' academic performance in physics; to assess the influence of team teaching on academic performance of secondary school students in physics and to identify challenges encountered by teachers of physics that influence academic performance of secondary school students in physics secondary schools in Bureti Sub County, Kericho County. The study employed descriptive survey design to collect data on teacher factors influencing academic performance of secondary school students in physics in secondary schools students in Bureti Sub County, Kericho County and was guided by Blooms theory of school learning. The study was carried out in 39 secondary schools sampled from the Sub County, out of which 35 were public secondary schools and 4 were private secondary schools. Stratified random sampling was used to come up with the study sample by selecting one physics teacher in a school having more than one physics teachers. But purposive sampling was used in schools which had only one physics teacher. Reliability of the instrument was done by piloting in two schools in another Sub County. Pearson's Product Moment Correlation Coefficient (PPMCC) formula was used for the test-retest to compute a relation coefficient and it was found that $r = 0.92$. Data was collected using questionnaires and document analysis. Data analysis and interpretation was done using statistical packages for social sciences (SPSS) and data was presented using frequencies, charts and descriptive statistics. This study found out that teachers' commitment, teacher's preparedness, team teaching and challenges faced by teachers of physics were found to be influencing academic performance of secondary school students in physics in Bureti Sub County, Kericho County. The findings obtained were used to make recommendation to the educators, principals, teachers, and parents/guardians on Teacher factors influencing instruction in physics in secondary schools students. Schools are advised to improve teacher's commitment in syllabus coverage to allow time for revision. Teacher preparation like teacher qualification, experience, turnover, work load and preparation of professional documents should be looked into by the schools. Study recommends that Team teaching be encouraged in secondary schools and schools physics laboratories should be having required number of physics apparatus which are well maintained. The study recommends that motivation of teachers should be improved so as to boost academic performance of students in physics.

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LIST OF ACRONYMS AND ABBREVIATIONS

BOM- Board of Management

INSET: In-Service Education and Training.

KCSE: Kenya Certificate of Secondary Education

KIE: Kenya Institute of Education

KNEC: Kenya National Examination Council

MOEST: Ministry of education

SCEO: Sub-County Education Officer

SCQUASO: Sub-County Quality Assurance and Standard Officer.

SMASSE: Strengthening of Mathematics and Science in Secondary Education

SPSS: Statistical Packages for social sciences.

TSC: Teachers' Service Commission

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The chapter discusses the problem to be studied in the research by looking at the following areas: the background of the study, the statement of the problem, the objectives of the study, the research questions, justification of the study, significance of the study, scope and limitations of the study, the assumptions of the study, the theoretical frame work, the conceptual frame work and the operational definitions of the terms.

1.2 Background of the Study

Science is recognized widely as being of great importance internationally for economic wellbeing of nation because of the need for scientifically literate citizenry (Frazer & Walberg, 1995). The importance of science particularly physics in the technological development of a nation cannot be overlooked. Secondary education is the foundation of the scientific and technological advancement that Africa needs to develop industrialized economies; it is also the gateway to higher education and to employment (Ndoye, 2003).

Over the years, researchers have analyzed how differences in teacher characteristics, including educational background and teacher training, are related to student learning. Various lines of research looking at teacher effectiveness since the 1960s have suggested that many kinds of teacher knowledge and experiences may contribute to teacher effects, including teachers' general academic and verbal ability; subject matter knowledge; knowledge about teaching and learning; teaching experience; and the set of qualifications

measured by teacher certification, which typically includes the preceding factors and others (Darling Hammond, 2000; Wilson, Floden, & Ferrini-Mundy, 2002; Rice, 2003).

Studies of teacher effects have found that teachers strongly determine differences in student learning, far outweighing the effects of differences in class size and composition (Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004; Sanders & Rivers, 1996), and sometimes matching the sizable effects of student background variables like family income and education (Clotfelter, Ladd, & Vigdor, 2007; Ferguson, 1991). Teacher effects appear to be sustained and cumulative; that is the effects of a very good or poor teacher spill over into later years, influencing student learning for a substantial period of time, and the effects of multiple teachers in a row who are similarly effective or ineffective produce large changes in students' achievement trajectories.

Academic performance in schools is attributed to adequate preparation by teachers, and teachers' laxity seriously hampers its achievement. Brown et. al. (1994) stated that no matter how kind, amiable and well-meaning a teacher may be, he or she cannot possibly succeed unless he/she has a thorough knowledge of the subject matter he/she is teaching and a good general knowledge. Teaching does not happen accidentally, and for it to be effective it needs thorough planning and preparation. Teaching is a complex endeavour, involving classroom management, lesson preparation and organization of teaching and learning activities, evaluation and feedback. Students' success in the classroom is largely based on effective classroom instruction and adequate preparation by teachers. Rosenshine et.al (1995) indicated that planning should be the first thing a teacher should do when beginning to teach and meeting a group to teach for the first time, which is also

an indicator to achieve educational goals. Ofoegbu, (2004) further elaborated that the ineffectiveness of teachers in classroom interaction with the students could be responsible for the observed poor performance of students and the widely acclaimed fallen.

Black, (1993) asserts that sciences (Physics inclusive) are practical subjects hence best learnt through experiments, observations, analysis and generalization of conclusion. Kulik, (1992) notes that, for Physics and other sciences to be understood better by all, there is need to emphasize its instruction in secondary schools through practical approach. Hickey et al, (2001) observes that the trend in educational reforms is to teach from a constructivist perspective. Teachers should focus more on practical activities during instruction. Gauvain, (2001) points out that constructivism include an emphasis on collaboration; this implies that learners should be allowed to interact during practical activities as much as possible. Martin et al, (1997) explains that rather than putting fully formed knowledge into the learners' minds, the teacher should guide them in constructing knowledge through scientifically valid approaches.

If Kenya hopes to realize newly industrialized status by 2030 and to become integrated in the globalized economies of the 21st Century, it is imperative that Kenyans access secondary education in large numbers and more importantly have an education which has both quality and relevance. This is the quality of educational opportunity, (Stromquist, 1989. Science education and education science are therefore requirement in all nations and all people worldwide due to the many challenges facing them. However, we cannot lose sight of the fact that in any teaching-learning situation, the students and teachers are among the factors influencing academics.

The teaching of physics provides learners with, understanding skills and scientific knowledge needed for scientific research, fostering technological advancement and economic growth in society where they live thus improving the standard of living(Kenya Institute of Education, 2002; Minishi et.al, 2004). Kenya needs to develop through science and technology, a human resource capacity for rapid industrialization, which will ensure economic growth and sustainable development (Changeiywo, 2001). Secondary education is important in developing the learner's potential and behavior in order for this education to be relevant to the national development goals.

Although science is essential for industrialization, there has been a decline in academic performance of secondary school students as well as low enrollment in the subject in Kenya (Kenya National Examination Council, 2003), students shun sciences particularly physics when given an option (Aduda, 2003).

Low achievement as seen in poor performance in physics may be attributed to among other factors inappropriate teaching methods and approaches used by physics teachers, poor distribution and utilization of school resources, low student motivation to learn physics and incompetence in science processes and skills among secondary schools physics students among other factors (SMASSE, 1998). The performance in physics is below the expectations that Kenya would require to actualize her goal for industrialization and become a middle level income country by the year 2030 (Republic of Kenya, 2007). Hence, the poor performance reflects the challenge Kenya faces in having adequate number of qualified students enrolling in scientific and technological disciplines in educational and training institutions in the country.

The table 1.1 below showed that the performance of physics in Bureti Sub County, Kericho County from the year 2010 to 2014 had been below average. The mean score has been stagnating at four out of the maximum mean expected which is 12. This showed that there must be factors contributing to this low performance.

Table 1.1 KCSE physics results for Bureti Sub County (2010-2014)

YEAR	ENTRY	A - B-		C+ - C-		D+ - E		M.S.S
		NO	%	NO	%	NO	%	
2010	1141	253	22.1735	345	30.2366	543	47.5898	4.412
2011	1189	296	24.8948	374	31.4550	519	43.6501	4.643
2012	1239	317	25.5851	409	33.0105	413	33.3333	4.463
2013	1262	350	27.73337	401	31.7750	511	40.4913	4.817
2014	1289	349	27.0752	423	32.8162	517	40.1086	4.569

Source: Bureti Sub County KNEC KCSE Analysis Report (2010-2014)

No nation can survive economically if the future generation is performing poorly in scientific field. Supporting this view, Greenburg and Mallow (1992) stressed that a nation with scientifically uneducated citizens cannot be expected to make any reasonable technical progress on such issues as nuclear energy and control of atmospheric pollution because of lack rudimentary tools to grasp the scientific arguments. The authors further observed that scientific and technological advances constitute the means by which nations are classified as either developed or undeveloped.

The teaching of physics provides the learners with understanding, skills and scientific knowledge needed for scientific research, fostering technological and economic growth in the society, where they live thus improving the standard of living (Minishi et.al ,2004; Patriciah & Changeiywo, 2008; Spaul, 2012). Teacher plays a major role in promoting knowledge and skills to help students and the general public cope with changes in the society and the environment as put by Rohlen(1997) as cited in Omosa(2009). Scholars and researchers generally are in agreement that the school variables, which include class size availability and use of learning resources, teacher factors and school administration play a critical role in educational achievement than other variables (Patrick, 2005). However, of all these, the important role of the teachers in the learning of physics is unquestionable. Teachers have a lot of influence on their practices. Teachers should have and apply specific abilities without which their influence may not be reflected in their students' performance in the subject.

The Kenya Certificate of Secondary Education (KCSE) Report for 2006 on students' performance advised teachers to give plenty of exercises, guide students into insights of the concepts taught and to cover syllabus within allocated time. Teachers fail to effectively cover the syllabus, and resort to drilling of students using unapproved materials and set standard tests for revision (KNEC, 2010). Studies that have been done on teacher factors that influence on timely syllabus coverage in secondary schools have been general or given limited insight (Mbiti 2013, Ngaruiya 2013, Tuwei 2013, Ngando, 2011).

The Kenyan government has made huge investments towards scientific advancement. Unfortunately, the performance of our students in physics at secondary school level remains poor. Various efforts have been made by the parents Teachers Association and concerned individuals in the area to improve the students' performance in physics but these have not yielded good results. A number of factors have been forwarded to explain low achievement of students in physics. However, studies done have been general and not specifically done to identify what actually causes low academic performance of secondary school students in physics Bureti Sub County, Kericho, Kenya. Therefore, this study therefore sought to study, teacher's commitment in physics syllabus coverage, teachers' preparedness, team teaching and challenges by teachers of physics as teacher factors influencing academic performance of secondary schools students in physics in Bureti Sub County, Kericho County.

1.3 Statement of the problem

Physics is one of the major subjects meant to provide the basic concepts needed to enhance the development of technology in the country. Kenya must keep pace with the technological advancement of our planet. Therefore, it is very necessary that there should be improvement in the core science subjects. Physics being one of the core science subjects is the bedrock of science and technology and if neglected, the related courses such as engineering, computer science, geology, Environmental design and management and others will suffer because of lack of students to take up the courses in Higher Institution. In spite of the great emphasis on physics teaching because of its central role in technological advancement, students are observed to perform poorly academically in the

subject. Performance in national examinations in secondary schools in Bureti Sub County has not been satisfactory over the years.

Furthermore, poor performance in physics which have become worse since few years now causes a lot of concern to parents and other stake holders. Bureti Sub County has registered a mean of below average from the years 2010 to 2014 in physics as shown in the table 1.1. Results of physics has been stagnating between a mean of 4.4 and 4.8 out of possible mean of 12 for the last mentioned five years. This ugly trend was not pleasing and a detail study was carried out to come up with a lasting solution because it was likely to affect the development of science and technology in our school system as students can assume that it is impossible to perform well in physics. The root cause must be unearthed and that is why this study was carried out in order to identify how teacher factors influence academic performance of secondary school students in physics in Bureti Sub County, Kericho County-Kenya.

1.4 Purpose of the study

The purpose of this study was to examine Teacher factors influencing academic performance of secondary school students in physics in Bureti Sub County, Kericho County. An attempt was made to identify and critically look into the extent to which factors like teacher's commitment in syllabus coverage, teachers' preparedness, team teaching and challenges encountered by teachers of physics in secondary schools in Bureti Sub County, Kericho County.

1.5 Research Objective of the study

- a) To assess the influence of teacher's commitment in physics syllabus coverage on academic performance among secondary schools students in Bureti Sub County, Kericho County.
- b) To determine the influence of teachers' preparedness on students' academic performance in physics in Bureti Sub County, Kericho County.
- c) To assess the influence of team teaching on academic performance of secondary school students in physics in Bureti Sub County, Kericho County.
- d) To identify challenges encountered by teachers of physics that influence academic performance of secondary school students in physics secondary schools in Bureti Sub County, Kericho County.

1.6 Research questions

- a) How does teacher's commitment in physics syllabus coverage influence academic performance among secondary school students in physics in Bureti Sub County, Kericho County?
- b) How does teacher preparedness influence academic performance of secondary school students in physics in Bureti Sub County, Kericho County?
- c) How does team teaching influence academic performance of secondary school students in physics in secondary schools in Bureti Sub County, Kericho County?

- d) How do the challenges encountered by teachers of physics influence academic performance of secondary school students in physics in Bureti Sub County, Kericho County?

1.7 Justification of the study

Kenya's vision of becoming industrialized by 2030 will among other factors depend on the progress made by scientists and technologists who will be involved in the selection and adaption of important technologies. For these quality workers to be produced in required numbers, teaching of science especially physics must be improved since schools are the production units of the work force, the quantity and quality of teaching have long been identified as factors that are linked to students' achievement. By understanding the relationship between teacher factors influencing academic performance of secondary school students in physics, the teaching and learning of physics can be enhanced leading to improvement in the performance at all levels of secondary school education.

1.8 Significance of the Study

The study will be of importance to schools' management as it can help in identifying aspects of wastage of time in syllabus coverage. Findings of the study would be used by school management and administration to formulate viable policy documents that would effectively boost performance of teachers. Findings of the study would also be used to sensitize physics teachers who are the implementers of the physics curriculum, on the strategies and techniques suggested to improve the performance in physics. Physics teachers will be able to understand about teacher's commitment in syllabus coverage,

teacher's preparedness, team work and challenges facing them. For curriculum developers, the findings will assist them to come up with more appropriate teaching methodologies so as to improve the students' performance in physics and also how to address challenges facing teachers of physics. It is hoped that the research findings will help in promoting teaching effectiveness and upgrading the quality of teaching. Further, this study will also benefit future scholars who would wish to do similar or related studies, as it will serve as a source of documented literature. The outcome of the study is therefore expected to improve on the academic performance of students in secondary schools in physics.

1.9 Scope of the study

The study basically dealt with teacher factors influencing academic performance of secondary school students in physics in Bureti Sub County. These were; teachers' commitment in physics syllabus coverage, teachers' preparedness, team teaching and challenges faced by physics teachers. The study was limited to Bureti Sub-county in Kericho County because performance over the years had been below average. It was also confined to physics alone among other science subjects to make it manageable. The study involved sampled physics teachers in the sub county.

1.10 Limitation of the study

The major limitation in this study was the academic entry behaviour of students and other factors influencing academic performance of students in physics like attitude, availability of resources and school environment. The researcher tried to make all these other factors

constant to see how factors influencing performance of secondary schools students in physics influence students' academic performance in secondary schools.

1.11 Assumptions of the study

1. The respondents possess the knowledge ability and the desire to answer the questions correctly
2. The respondents' responses were honest to issues asked
3. The schools used in the sample had common characteristics affecting performance, with factors affecting performance of secondary school students in physics being the major source of difference in academic achievement in physics.

1.12 Theoretical framework

According to Ghaur and Granhaug cited in Mwikya (2013), a theory is a set of interrelated concepts, definitions and propositions that present a systematic view of specifying relations among variables with the purpose of explaining and predicting phenomena. The study was based on Bloom's theory of school learning as presented by Murphy (2007). In this theory, Benjamin Bloom suggested that children's level of achievement and rate of learning in different academic subjects as well as their emotional well-being (positive and negative) is strongly influenced by the "quality of instruction" or what can be thought of as teacher effectiveness including the extent to which the instruction to be given is appropriate to the learner. He noted that even though the way

children are taught is important; there are other factors that influence the way students receive information and the way they interact in the classroom.

The study attempted to investigate the quality of instruction and teacher effectiveness influencing academic performance of secondary schools students in physics. The areas considered in the study included; how teacher commitment in physics syllabus coverage influence academic performance of students, how preparedness of the teacher influence academic performance of the students, the influence of team teaching on academic performance of students and to identify how challenges faced by teachers of physics influence academic the academic performance of secondary school students in physics.

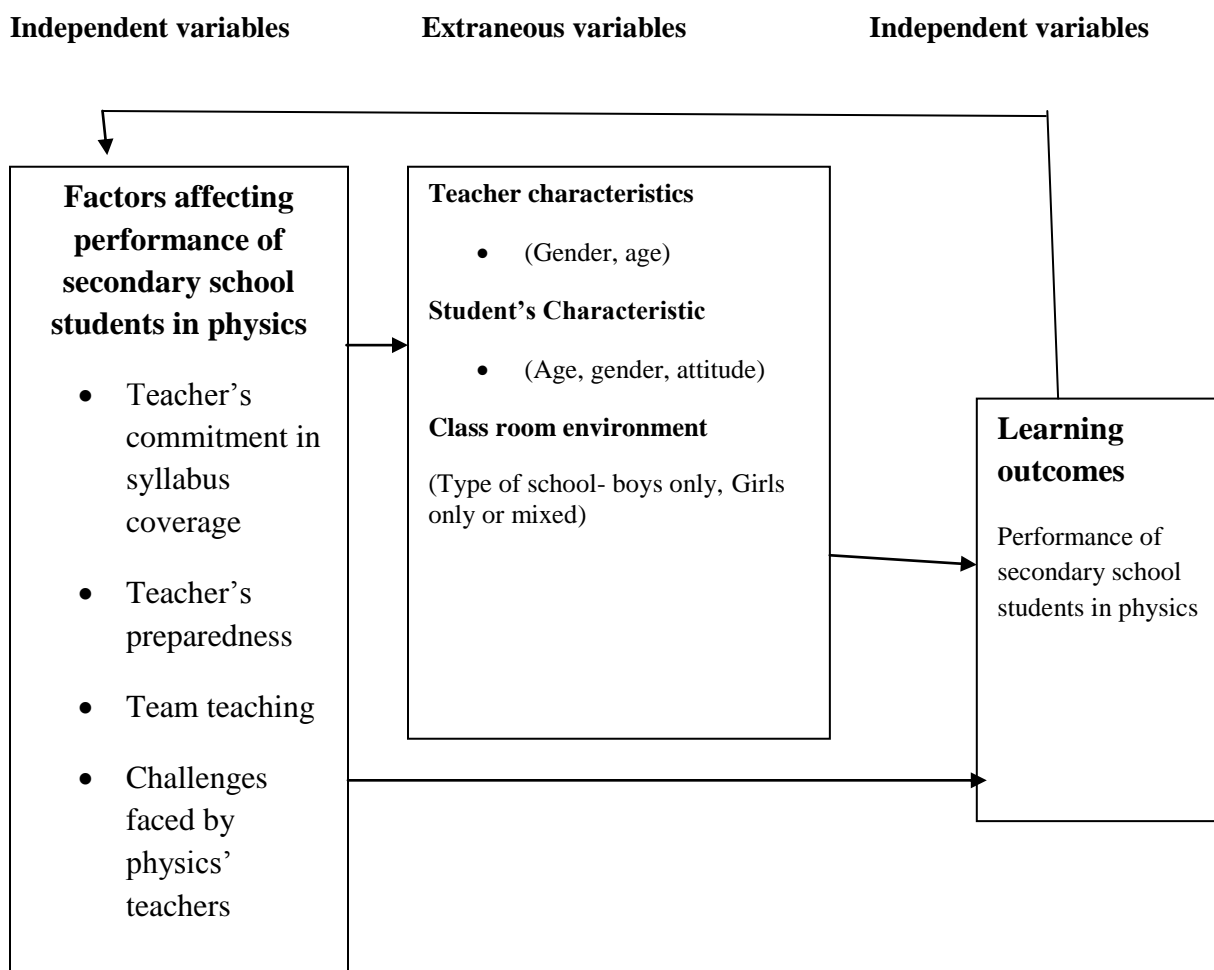
1.12 Conceptual framework

According to Mathooko, Mathooko and Mathooko (2011), conceptual framework is a model of how one theorizes or makes logical sense of the relationship among several factors that have been identified as important to the problem. Mugenda and Mugenda (2003) define a conceptual framework as a hypothesized model identifying the concepts under study and their relationships.

There are variable which interact to influence the teaching and learning of physics. These are the independent and dependent variable. In this study, the factors influencing performance of secondary schools students in physics were the independent variables. These factors influence academic performance in secondary schools students in physics teaching, which is the dependent variable.

Fig 1.1 shows the relationship of variables influencing academic performance of secondary school students in physics. These include: teacher's commitment in syllabus coverage, teacher's preparedness, team teaching and challenges faced by teachers of physics as shown in the figure 1.1. There are intervening (extraneous) variables which were controlled.

Fig 1.1: conceptual framework of factors affecting academic performance in secondary schools students in physics.



1.14 Operational Definitions of Terms

Curriculum- The term curriculum refers to the lessons and academic content taught in a school or in a specific course or program

Preparedness - Readiness of teachers to align with the intended, planned and enacted curriculum in content knowledge, pedagogy and curriculum knowledge.

Academic achievement: Academic achievement or (academic) performance is the outcome of education ; the extent to which a student, teacher or institution has achieved their educational goals.

Team teaching – instructional organization in which two or more teachers are given responsibility, working together for all or a significant part of the instruction of the same group of students

Schemes of work-A scheme of work defines the structure and content of a course.

Syllabus- A syllabus is an outline and summary of topics to be covered in an education or training course.

Teacher's commitment- teachers inputs to improve timely coverage of syllabus in order to improve academic performance of students in secondary schools.

Physics- One of the three branches of science (Chemistry, Biology and Physics) that deals with the study of components of matter, their properties and energy exchange, useful in technological development and industrialization.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, literature review was attempting to review researches which have been done concerning teacher factors influencing academic performance of secondary school students in physics. One of the major purposes of literature review was to update the researcher on the work which has been done in the area of study. The areas covered in this section are; Role of physics in national development, teacher's commitment in syllabus coverage, teacher's preparedness, team teaching and challenges faced by teachers of physics

2.2 Role of Physics in National Development

Science is recognized widely as being of great importance internationally both for economic well-being of nations and because of the need for scientifically literate citizenry (Fraser & Walberg, 1995). Knowledge of science and technology is therefore a requirement in all countries and all people globally due to the many challenges that are facing them. Science as an instrument of development plays a dominant role in bringing about these changes by advancing technological development, promoting national wealth, improving health and industrialization (Republic of Kenya, 1999; Validya, 2003). Every person in society requires scientific knowledge in order to fit in the present society. Thus the teaching of science has become part of the general education of the society. According to K.I.C.D (2002). Since then science has developed to a level where we today

live in scientific civilization in which science is no longer confined to a few individuals or countries that are devoted (Momanyi, 2010)

2.3 Teacher's commitment in physics Syllabus Coverage

The role of a teacher is very important in any teaching exercise; especially since his/her direct Participation can range from complete control over what is learned to minimal intervention. For instance, in schools where there are formal teaching methods, the teacher is the source of all the knowledge that the children acquire in class. A good teacher therefore is one who has a good understanding of what his students use to learn and also of their capabilities for learning (Farrant, 1994).

Schwille, Porter, Belli, Floden, Freeman, Knappen, et al. (1983) argue that teachers, as they interact with students, are the ultimate arbitrators of what is taught (and how); they make decision about how much time to allocate to a particular school subject, what topics to cover, when and in what order, to what standard of achievement, and to which students, and collectively, these decision and their implementation define the content of instruction. In general, teachers determine the content that is taught. Brophy (1982) suggests that these decisions are likely to be influenced by such factors as external pressures, for examples standardized achievement tests and school- district objectives, knowledge and beliefs about the particular content, and responses to individual differences among students.

Students thrive in environments where they feel safe, nurtured and respected. All students even those who have learning difficulties and extraordinary personal challenges can do

well when they are physically comfortable, mentally motivated and emotionally supported. The classroom environment should be an exciting comfortable place, since the class room has direct impact on the children. The teacher has the responsibility of creating pleasant surrounding that emphasizes learning (Clifford and Edwards, 2008).

The physics teacher should know how students learn and how to use instructional practices so that the learning environment is student centered, knowledge centered, and assessment centered, and community centered (National Research Council, Washington DC, 2005). Teachers should know how to establish and maintain a respectful, supportive, and safe learning environment that is emotionally and physically conducive to learning.

Farrant (1980) notes that educational change, whether caused by curriculum development, increased investment or adoption of innovative practices almost always places the teacher in some new role. This necessitates the teacher to be prepared for the new function. Other researches claim that teacher beliefs relate to teacher classroom practice (Thompson, 1992; Kagan, 1992). Fang (1996), on the article entitled “A review of research on teacher beliefs and practice,” argues that teacher beliefs and attitudes significantly contribute to enhancing educational effectiveness and achievement.

Efforts to improve performance in education are pulled back by woes such as inadequate coverage of syllabus, mismanagement and wastage of quality teaching time by teachers, perception that education no longer guarantees employment and lack of efforts by parents, teachers, leaders and community to create an enabling learning environment (Njoroge, 2012). Timely syllabus coverage is critical to learners as pertains to performance in end of secondary school course examinations (KCSE) and hence choice

of which higher education institutions to join by KCSE graduates (Amadalo, Shikuku & Wasike, 2012).

According to Ango (1990), students' poor performance in physics globally is basically due to lack of involving the students in the teaching learning activities right from the beginning of any new concept to be taught, lack of qualified teachers as well as experiences in teaching and unavailability and/or insufficiency of materials in the laboratories. However, Olarewaju (1986) and Nwagbo (1995) were of the opinion that ignorant of the teachers or neglect of activity- oriented methods by the teachers grossly contribute to students' low performance in Physics.

In Kenya, the MOE provides the syllabus to teachers as a guide to content delivery. Generally, coverage of the syllabus may influence performance (KNEC, 2006). Early coverage of syllabus allows time for working on the students' self-efficacy and mathematical self-concept which are very important in developing self-confidence and improving performance of individual students (Ferla et al,2009; Pajares and Miller, 1994). In addition, prophet and Badede(2009), found that children best learn in mother tongue contributing to improved coverage of syllabus in science, leading to improved performance. However, Ghani(2009) found that 68.1% of university students do not agree that syllabus coverage affects their performance in their final examinations.

KNEC (2000) reports indicate that candidates failed in questions whose answers depended on how well experiments outlined in the syllabus were covered. KCSE Biology exam covers the entire syllabus. Completion of the Biology syllabus implies confidence

in both the teacher and the student. When the syllabus is covered early in the year, enough time is left for thorough revision affecting students' performance.

Teaching is geared around memorization of basic concepts and their reproduction in the examinations (Sadiq, 2003). The students who enroll for the subject resort to cramming definitions and formulae. Consequently it is difficult for even the high achievers to apply what they have learnt in novel situations. Usually the performance in physics is among the worst among all the subjects at the school leaving level (KNEC, 2003, 2006). Studies show that secondary school science teachers' education correlates positively with their learners' achievement in matriculation examinations.

Literature based on developing countries shows that, students are only taught for only a fraction of the intended number of hours. Normally, instructional is normally wasted through informal school closures, teacher absenteeism, delays, early departures and poor use of class room time (Abadzi, 2007, Gillies and Guijada, 2008). Further is argued that teachers who are present are often involved in other activities leaving students to play instead of engaging learning. In most cases, invaluable time is spent handing out text books, coping from the black board or doing small chores. Also, teachers may interact only with the small number of students who are of higher ability and exclude the rest, to worsen the situation, there is no evident system to track and improve the situation (Abadzi, 2007; IEG, 2008).

Khaete(1995) suggests that teaching and learning processes should be a spiral mode of teaching which would facilitate the restructuring of students' concepts hence better understanding of science which translates to higher achievement. However, he notes that

the school teaching and learning practices in Kenya is examination oriented at all levels of schooling, secondary level included. There exist a highly competitive national examination at the end of secondary schooling and good schools are classified based on top best “performers” in the KCSE results country wide. Such schools are regarded by all: parents, students, MOEST and the society as a whole as the best for students.

Teacher commitment has been identified as one of the most critical factors for the future success of education and schools (Huberman, 1993). Teacher commitment is closely connected to teachers’ work performance and their ability to innovate and to integrate new ideas into their own practice, absenteeism, staff turnover, as well as having an important influence on students’ achievement in, and attitudes toward school (Firestone, 1996; Graham, 1996; Louis, 1998; Nias, 1981; Tsui & Cheng, 1999). School leadership is considered to be highly significant in influencing teachers’ levels of commitment to and engagement with new initiatives and reforms (Day, 2000; Fullan, 2002; Louis, 1998). Teaching is a complex and demanding profession. To sustain their energy and enthusiasm for the work, teachers need to maintain their personal commitment to the job (Day, 2000). Teaching is complex and demanding work and there is a daily need for teachers to fully engage in that work with not only their heads, but also their hearts (Day, 2004; Elliott & Crosswell, 2001; Fried, 1995; Nias, 1996). It appears to be a professional necessity for teachers to be emotionally to their work, for without this emotional connection teachers face the constant danger of burn-out in an increasingly intensified work environment (Nias, 1996).

“Those who feel the call to teach, who sense teaching is a profoundly meaningful part of their life, have a passion for teaching” (Garrison, Liston, 2004, p.1). Passion simply is defined as: “a strong inclination or desire towards an activity that one likes and finds important and in which one invests time and energy” (Carbonneau, Vallerand, Fernet & Guay, 2008, p.978). Fried defines a passionate teacher as: “someone in love with a field of knowledge, deeply stirred by issues and ideas that change our world, drawn to the dilemmas and potentials of the young people who come into class every day” (2001, p.44). Kushman (1992) and Rosenholtz (1989) in their studies put forward the relationship between teacher commitment and student achievement.

Fried (2001) supporting this idea states that there is a strong connection between passionate teaching and the quality of student learning and explains the reasons as:

1. If students know that teachers get immersed in their subjects and sets high standards for students, they take their studies more seriously. At this point, teaching ceases to be a job done by force, and turns into an inspiration for students.
2. There is little chance of building a relationship based on respect and trust between teacher and student unless a collaborative learning environment and willingness to take risks are not created.
3. Students will not have motivation to learn as long as they do not have a clear idea of how to apply things they have learnt to their own lives.

Numerous authors and researchers agree that teacher commitment is central to the work of teaching and functioning of education system. Elliott and Creswell (2002) argue that teacher commitment and engagement have been identified as amongst the most critical factors in the success and future of education. It contributes to teacher's work performance, absenteeism, burnout, and turnover as well as having an important influence on student achievement. Becker (1999) defines commitment as the investment in a particular career, in this case, teaching. Lortie (1995) regards commitment as the willingness an individual enacts in investing personal resources to the teaching task. Nias (1991) looks at teacher commitment like an organizational commitment, which is conceptualized as being multidimensional.

Joffress et al. (2006) wrote that teachers' commitment is a crucial factor to an effective school, teacher satisfaction, and retention. They claim that low levels of teacher commitment results into decreased student achievement tests, than in areas where teachers were found not to be committed to their responsibilities, learners performed poorly. Committed teachers tend to produce good results at national examinations. Woods in Truman et al. (2008) in the study entitled 'primary teacher commitment and attractions,' claims that teacher commitment takes three forms, with the most important one being professional commitment. They argue that a professionally committed teacher rates their teaching abilities very highly and are committed to their professional advancement.

Day, Elliott, and Kingston (2005) argue that there are different forms of commitment to teaching. According to them, the nature and intensity of commitment to teaching depends

on factors derived from personal and professional lives. Commitment is a word they use to distinguish those who are caring, dedicated, and who take their job seriously from those who put their own interest first. The professionally committed teachers take their job seriously and they get enjoyment from it (Elliott & Croswell, 2001). Frazer et al. (1998) believed that teacher commitment decreases progressively over the course of their career. At the beginning of the teacher's career, Frazer argues that teacher's commitment is associated with professional identity, followed by a stage of experimentation and research for new challenges. Thus, transition from an enthusiastic engagement with the profession to a more limited involvement reduces teacher's classroom practices and engagement.

Nias (1991) and Tyree (1996) wrote that teachers who are committed are those who see their students' welfare; they care for, responding to, and meeting students' needs. They strived to improve on their practice and look at pedagogies and research. They also talk and listen to their children, at the same time they work as a team with others, appropriately prepared for their lessons, and are reflective practitioners. Another view shared by committed teachers is that teaching is not just a job. Teachers invest their personal time even outside school contact hours. They have made teaching as a lifestyle. They often contemplate on their class programs and students while engaging in a range of personal activities like in shower, shopping, or watching television (Tyree, 1996).

The connection between teacher time spent on content and student learning is not new, it was established in the 1970s and 1980s (Carroll, 1989; Fisher & Berliner, 1985). Increasing time on learning has also been linked to enhanced skill development and

deeper conceptual understanding (Clark & Linn, 2003; Smith, 2002). These and other studies show a positive correlation between time spent on content and student learning (Huyvaert, 1998; Rangel & Berliner, 2007).

According to Irvine (2001) “students defined caring teachers as those who set limits, provided structure, held high expectations and pushed them to achieve” (p. 6-7). Teachers with positive attitudes also possess high expectations for success. Rynolds, & Muijis (1999) report that students of teachers with high expectations learn more as teachers’ expectations rise. Teachers’ expectations’ levels affect the ways in which teachers teach and interact with students. In turn, these behaviours affect student learning. Generally, students either rise to their teachers’ expectations or do not perform well when expectations are low or non-existent. The best teachers were recommended as having the highest standards. They consistently challenged their students to do their best. Many students reported that they had little confidence in themselves as youngsters. Parent or siblings had told them that they were dumb and the children believed it to be true. When their teachers expressed the fact that they believed in their ability, it served to recognize them and encourage them to reach new heights. Some ended up choosing careers in areas that they were originally encouraged in by these teachers. Expectations are often self-fulfilling, and must therefore be expressed with care and consideration; favorite teachers apparently have a talent for doing that.

Instructors in science courses may have implicit expectations about what students learn and how to learn it. Redish et. al. (1998), refer to these goals as the “hidden curriculum.” It has been shown that students come to physics classes with a variety of goals and

expectations about physics and physics learning. As far as instruction is concerned, teachers can develop a positive classroom climate if they avoid forming deferential expectations for students based on qualities such as gender, ethnicity, or parents' background (Schunk, Pinatrich & Meece, 2008:322). Similarly, they should avoid forming expectations based on such factors as record files, colleagues, information from other teachers or even the family's reputation (Good & Brophy, 1994). Teachers can communicate expectancies for success by performing groups with students from all levels of physics performance, and by not "marginalizing" low achievers.

Teacher is able to judge how much he needs to intervene in each pupils learning and knows the most effective way of providing this assistance. This skill of teaching lies in knowing who, what and how to teach and also being able to evaluate them. Whilaker (1995) was of the opinion that teachers are the most important factor in creating positive learning environment. He further stressed that as professional they know that teaching is more than simply passing information on a terra rosa. Many teachers are aware of the need of engaging in the "search for more life-enhancing and effective processes. Teachers' interest in initiating life enhancing learning activities and qualities than those associated with their initial training as teachers. Teachers need new knowledge, skills and qualities in order to cope with the complete process of classroom management and organization. Adesina (1997), states that teachers constitute the single most important fabric upon which hangs the success of the whole educational edifices.

To explain learning, Barr and Dreeben (1983) used content coverage, the quantity of instructional content covered in the first grade as an indicator of instruction. The teachers

they studied adapted instruction with a single text book series to a variety of ability levels by varying the extent of the curricular materials they covered in different groups. Barr and Dreeben also discovered that content coverage has a major effect on how much children learn in first grade, even when initial aptitude is statistically controlled.

There is a strong relationship between content coverage and student achievement (Dunkin 1978; Barr and Dreeben 1983). Variation in student achievement can be explained, at least in part by variations in content coverage (Englert, 1983, Wyne &Stuck, 1982). Good, Grouws, & Beckerman (1978) found that the coverage of curriculum materials, the number of textbook pages covered by different fourth-grade mathematics classes was significantly related to achievement gain. Onabamiro (1997) was of the opinion that some teachers in our secondary schools lack mastery of their subject and thereby cannot communicate effectively while some are too rigid in their teaching methods. These make student bored, irksome, and irritated and demonstrate irresponsibility by showing lack of interest in the lesson. The teaching approach that a teacher adopts is one factor that may affect student's achievement (Mills, 1991). Therefore use of appropriate teaching method is critical to the successful teaching and learning of Physics. Effective teachers practice pedagogical nurturing in every lesson, in very human interaction.

Cruickshank, Jenkins & Metcalf (2003) define effective teaching: Most people would agree that good teachers are caring, supportive, concerned about the welfare of students, knowledgeable about subject matter, able to get along with parents...and genuinely excited about that work that they do. Effective teachers are able to help students learn (p.

329). Norlander-Case, Reagen, and Case (1999) clearly articulate the importance of being a nurturing teacher, calling for teacher who “has the capacity to nurture those in their care” (p. 53).

Effective teaching comes from the knowledge of relationship between classroom process measured through observations of systems and student outcome, most notably gains in standardized achievement test, for instance KCSE. However, some principles on effective teaching are rooted in logical of instructional design, for example, instructional methods (Corno & Snow, 1986). The school curriculum assumes different types of learning that call for different type of teaching. No single method such as direct instruction or social instruction of meaning can be the method of choice for all occasion. For any subject, physics included, instructional needs change as the students’ expertise develops. Therefore, what constitutes an optimal mixture of instructional methods and learning activities will evolve as the student’s school years, instructional units and even individual lessons progress (Corno & Snow, 1986; Gastel, 1991; Harris and Taylor, 1983).

According to American Association of physics teachers (1988), an effective physics teacher should understand what constitutes effective teaching. He should understand how to develop learning outcomes for science instruction that incorporate state and national standards for teaching, and select appropriate curriculum materials to meet standard-based outcomes. They understand the logical connections between the topics of the curriculum, the need to build on each other, and to create learning progressions. They are aware of the “depth versus breadth” conundrum of science teaching, and have an

understanding of how to appropriately balance transmission and constructivist approaches to teaching and learning.

According to association, physics teachers prepare lessons using a variety of instructional approaches; create unit plans, ideal with the broad implications of year-long curriculum planning. This includes the proper alignment between preparing objectives, designing appropriate means of achieving these objectives, and ways of assessing whether the goals are achieved. He should use a variety of instructional strategies to help students learn and understand the concept of physics. These include but are not limited to interactive demonstrations, inquiry lessons and labs, reading, case study discussions, peer instruction, cooperative learning, Socratic dialogues, problem-based learning, historical studies, and use of strategies tailored to meet the needs of diverse learners. They will effectively utilize a cooperative learning strategy that involves small groups of students in roles where they share a common goal and resource in order to build interdependence. The article by the association also suggests that physics teachers should elicit, identify, confront and resolve resilient preconceptions that students bring to the classroom that are derived from causal observations of the physical world. Teachers should understand the difficulties that students encounter in the formulation of scientifically acceptable explanations. They should help students self-assess and regulate their learning by reflecting critically on what they should know and be able to do.

Physics teachers should understand and apply accepted practices of sciences to help students develop knowledge on the basis of observation and experiences. This includes the appropriate use of learning cycles and instructional practices such as discovery

learning, interactive demonstrations, inquiry lessons, inquiry laboratory and hypothetical inquiry. Physics teachers assess student learning continually by effectively using diagnostic, formative, and summative practices. They should also be familiar with technology and use of technology tools in physics lessons. It is the role of the teacher to establish the students ideas in a given concept area then introduce analogies of accepted scientific concepts so that the student can compare their own conceptions with scientifically accepted concepts. This may lead to a better understanding of scientific concepts hence achievement in science-in this case physics.

According to Harris and Taylor, (1983), effective teaching practices should allow for increased opportunity to learn. Students tend to learn more when most of the time allocated for curriculum activities and classroom management systems emphasizes maintaining their engagement in those activities. An effective teacher allocates most of the available time to those activities designed to accomplish instructional goals. Establishment of the purpose of the activity, connecting it to prior knowledge and cueing the students' that kind of activity that requires and establishes the learning orientation. Therefore, commitment in teaching influences how syllabus is taught and covered effectively.

Different conceptualizations of knowledge, have been forwarded, from Shulaman's (1986) Pedagogical Content and Knowledge(PCK) more specific versions of PCK(e.g., technological PCK, Mishra & Koehler,2006) to basic content or subject-matter knowledge. Teacher educators have argued for the importance of pedagogy, classroom management and the like, that teachers gain from education coursework (Darling-Ball,

2005), though it is difficult to dissociate pure content knowledge from the pedagogical aspect of this teacher characteristics.

Beliefs are defined as personal constructs that provide an understanding of a teacher's practice. Perry and A strong positive belief cause higher achievement among students. Relich et al. (1994) observes that a positive teacher attitude contributes to the formation of pupils' positive attitudes. Carpenter and Lubinski (1990) show that classroom strategies used to teach a subject are influenced by teacher attitudes, which in turn influence pupils' attitudes. This implies that teacher attitudes towards the subject actually produce the same attitude on the learner. It is therefore assumed that teachers who hold more learner-centered, socio-constructivist oriented beliefs would translate into their classroom practices greater enthusiasm towards actively engaging their learners in acquiring mathematical concepts and developing mathematical thinkers and problem solvers (Ernest, 2000). A teacher with negative beliefs about physics influences his or her learners negatively, whereas the learners of teachers with positive beliefs about physics enjoy and successfully perform in physics and therefore has an impact on how syllabus is cleared.

According to Khaete, due to the foregoing scenario, the entire teaching staff of most schools will resort to drilling of their students through repetitive teaching of what is likely to lead to a higher percentage of their students passing the KCSE so that their school can appear in the top 100 nation all or as currently practiced, produce the greatest number of students in the top 100 nationally.

The literature reviewed suggests that there is a great influence of teacher instruction on the student's achievement. The present research was designed to find out more about the influence of the teacher's commitment in the coverage of physics syllabus on academic performance of secondary school students in physics in Bureti Sub County, Kericho, Kenya.

2.4 Teacher Preparedness in the teaching of physics

Armstrong, et al. (2009), indicates that in order to provide quality learning experience for all students, lessons must be well planned and prepared effectively. They describe responsibilities and characteristics of the 21st century teacher as: matching instructions and programs to learner's characteristic, conducting task analysis to identify an appropriate beginning point, and a logical sequence for instruction, specifying learning intentions. Lessons should be well prepared to suit the learners' capabilities and interests. Lessons must stimulate learners to want to learn the new information.

Armstrong, et al. (2009) further confirms that as one plans for a group of learners he/she needs to engage in what is called "task-analysis activities." Task analysis requires that one takes the content that is to be taught and first, identify the desired results from learning of the content; secondly, break the content into smaller components or sub- tasks that logically build towards the desired results; and finally, define appropriate teaching approaches for each of the components and specify lesson objectives. Once task analysis has been done satisfactorily, then follows lesson presentation. Effective lesson presentation, according to Armstrong, has several key elements that include stimulating and maintaining of interest. Content presented should interest and motivate individual

learners. The teacher has to use a variety of approaches to motivate learners. Variety is essential because each learner's needs are unique. Motivation should be at the beginning of the lesson, during learning sequence, and finally, at lesson conclusion finally, on sequencing of lessons, a lesson presentation follows a logical sequence. Information is presented in an organized manner, regularly checking pupils' understanding, providing an opportunity for practice, giving frequent feedback, and concluding lessons by reviewing main points (Armstrong et al., 2009).

Planning is a requirement for any program to succeed. A plan is an arrangement or a method for doing something. It is a future intention to act in a certain way in order to achieve set objective. It is a process of arranging and organizing how to do something carefully in advance (MOEST, 2001). A scheme of work is a key planning document for all teachers. It is a personal plan to cover the syllabus, taking into account variables like time allocation, pupils' ability levels, and pupils' previous experience, available resources and putting content in a logical sequence. Other considerations involved in planning the scheme of work include scope to be covered, sequence, objectives, learning activities, learning resource and evaluation. Learning activities refer to the experience you give learners to support the learning of physics. They should be well thought out and planned in advance. The activities should be varied involving the child in a practical work, watching demonstration and problem solving and reinforcement activities. Mathematics lesson plan is a short, carefully developed and written outline designed to help the teacher achieve the objectives of a specific topic, skill, or idea (MOEST, 2001). Indimuli et al. (2009) claimed that teacher preparation is vital for effective teaching and learning process.

Effective teaching include: preparation, implementation, and evaluation. Evaluation is administered in form of continuous assessment, and end-of-course examination. Accurate assessment of students' academic abilities has been identified as one of the most crucial variables related to effective instructional planning and positive student outcomes (Shinn, 1998). It has been argued that without a valid assessment of students' academic skills, instructional decision making is unlikely to promote academic competence (Martens & Witt, 2004). According to Stiggins et al. (2007), there are two kinds of assessment during instruction: assessment for and assessment of learning. Assessment for learning involves use of homework assignments, quizzes, and self-assessment drafts. This kind of assessment is child centered and gives the learner an opportunity to find information about areas of strengths and areas of further learning. Assessment of learning is a periodical assessment like midterms and final examinations which are teacher centered and judgmental for they are meant to inform the final grade of the learner.

Stiggins et al. (2007) further described four fundamental questions that instructors (teachers) need to address whenever he/she plans for what they call accurate assessment and effective use which include the purpose of assessment, the learning target, the assessment methods and the ways of reporting the results. Ballard and Johnson (2004), in their educational research on mathematics assessment, confirmed that frequent quizzes do yield benefits. They compared test results of students who were exposed to quizzes with a control group who experience no quizzes. They found significantly higher scores for students who experienced quizzes and concluded that frequent quizzing influences learning performance.

The mean scores for these students were significantly higher than for students in the control group who experienced in quizzes. MOEST (2001) describes how assessment helps a teacher. A teacher is able to identify pupils' achievement, pupils' needs, weaknesses, and strengths. A teacher can carry out assessment either informally or formally. Informal assessment involves listening to pupil's explanations, demonstration or questioning pupils deliberately, while formal assessment is timed, marked and invigilated by external person.

According to Indimuli et al. (2009), evaluation is a process of determining the extent to which the stated educational objectives are being achieved. Evaluation is done in order to: identify the knowledge, skills and attitudes that pupils have acquired, find out weaknesses and strengths of teaching strategies and learning resources used, motivate pupils as they prepare for a test or examination, help pupils to know their progress in specific areas, and provide a basis for promoting pupils from one level to another. Evaluation therefore helps a teacher to know his/her level of learners hence making use of time appropriately in covering syllabus to avoid repletion of concepts or repeat where students have performed dismally. The same evaluation/assessment can be used to know whether syllabus is covered efficiently and effectively.

In his findings, Wenglinsky (2002) concluded that teacher's professional development in higher-order thinking skills, hands-on learning, and professional development in diversity correlated positively with students' academic achievement. Similarly, Ingvarson et.al. (2005) found that teachers' professional development in content focus and active learning correlated positively with students' academic achievement in mathematics. Ferguson

(1991) defines competence as “The combination of attributes (knowledge, capabilities, abilities and attitudes) which individual needs in order to perform a task appropriately.”

The ability to do something is the quality or skill in doing a particular task and having the competence includes more than just being able to do something with understanding and doing it based on personal decision because of one’s own personal consideration competences imply that something is done well. It is easy for students to tell if a teacher is prepared for a class/lesson. Even young children know when a teacher is organized and ready for the day’s lessons.

Competent and knowledge of the content area being taught is something that students always expect from teachers. The well prepared teacher is more likely to be able to take time during lessons to notice and attend to behavioural matters, and is less likely to miss the beginning of potentially disruptive activity. If, on the other hand, teachers have not invested sufficient time in planning and preparation, they tend to be so focused on what they are doing that they miss the early signs of misbehaviour. This ultimately results in frequent disruption, waste of valuable instructional time, and student frustration (AAPT, 1998).

The classroom of a competent/prepared physics teacher is an active learning community where students: work in groups conducting meaningful experimental investigations; build and test scientific explanations; engage in thought provoking activities; and conduct inter-group discussions and evaluate of each other’s argument(AAPT,1988). In such a climate students are actively engaged in discussion and collaboration. There are different conceptions of what positive classroom environment could look like. There should be

teaching for understanding the primary goal of mathematics and science education reform-requires that students are actively engaged in the classroom, are willing and able to communicate their ideas and are able to learn from each other. The present research sought to find out how teacher preparedness influences academic performance of secondary school students in physics

2.4.1 Qualification of the teacher

According to Indoshi (1999), any profession including teaching requires the practitioner to continue his education throughout his entire professional life. This includes attendance of courses frequently. This is because there is need to help the teacher to gain knowledge and competences, he must master if he is to avoid lapsing into rapid professional obsolescence. According to Wild (1996), an assumption is being made that the teachers need to know how to use the tools of technology without first knowing why they need the tools, and what they are going to do in the classroom with the tools. Taylor (1994) also notes that, teachers who have no interest in using technology need some level of incentive as well as support from administrators.

Olson (1992) also notes that, schools often overlook the importance of providing professional development activities that will allow teachers to understand why they need the tools, what they will do with the tools, and how to use the tools. This makes most classroom teachers today spend the majority of their time on the very same manipulations using paper and pencil techniques.

Boyd, Grossman, Lankford, Loeb & Wyckoff (2005) found that student achievement is most enhanced when teachers are fully certified, and have completed a teacher education programme. Goldhaber & Brewer (1997, 2000) analyzed a nationally representative group of secondary school mathematics teachers in the NELS study(1988, p.88) data set and found that students had higher achievement gains when their teachers were certified than those whose teachers had no certification in other subjects.

Darling-Hammond (1988) defines “well qualified teacher” as one who is fully certified and holds the equivalent of a major in the field being taught. Harris & Sass (2006) examine how teacher qualifications and in-service training affected student achievement in Florida. They found effects of experience and educational background on teacher performance. In addition, they found that a teacher’s college major or scholastic aptitude test (SAT or ACT) is unrelated to their classroom performance. Rice (2003), states the following: Teacher course work in both subject area taught and pedagogy contributes to positive education outcomes. Pedagogical course work seems to contribute to teacher effectiveness at all grade levels, particularly when coupled with content knowledge.

Wayne and Youngs (2003) also targeted teacher quality in their analysis of studies that examined the characteristics of effective teachers and their link to student effectiveness. Similar to Rice, Wayne and Youngs examined ratings of teachers’ undergraduate institutions, teachers’ test scores, degrees and coursework, and certification status. They concluded that “students learn more from teachers with certain characteristics. Teachers differ greatly in their effectiveness, but teachers with and without qualifications differ only a little” (p. 100-101). Loughran et.al.(2002) posit that while these teacher qualities

are indeed important they appear to have a “singular focus on content knowledge” (p.1). Highly qualified teachers must also know “how to organize and teach their lessons in ways that assure diverse students can learn those subjects... Highly qualified teachers don’t just well designed, standard-based lessons: they know how and why their students learn... (p2).

Koech in his report argues that there is need for providing adequate time for both academic and professional preparation of Bachelor of Education Degree Republic of Kenya ,1999) - Koech Report, 2000: 1666, recommendation 9.52): the effects of teacher training on academic achievement become clearer when the focus is on subject matter knowledge as opposed to certification. The research is generally consistent in indicating that high school mathematics and sciences teachers with a major in their field of instruction have higher achieving students than teachers who are teaching out of the field.

Maundu studied the effect of teacher qualifications on the performance of students in science and mathematics in Kiambu district and concluded that there was significant correlation between teacher qualifications and pupil performance in science and mathematics. The good performance was attributed to excellent instructions given by qualified teachers in an important indicator for their knowledge and competence in science teaching, it has only limited utility in analyzing how well prepared teachers are for what they have to teach in schools (Stigler,J.w., & Hiebert, J.1999;Stevenson, H., & Stigler, j. w. 1992). More detailed knowledge of the courses they have taken during their training needs to be compared to the actual content and skills required to teach the high school’s curriculum.

The literature reviewed suggests that there is an influence of teacher qualification on academic achievement. However, a few studies suggest otherwise. The present research sought to find out the situation on the ground, how teacher's preparedness in terms of qualification influences academic performance of secondary school students in physics in Bureti sub County, Kericho County, Kenya.

2.4.2 Number of lessons a teacher is allocated.

The teacher is one of the most important inputs into the education system and, therefore, efficient management and utilization of teachers is crucial to the quality of learning outcomes (MOEST, 2005). The number of lessons a teacher is allocated influences performance. (Wabuke et al, 2013). Too much work for the teacher affects their performance on content delivery and discourages them not to assess their students regularly. Assessments indicates the progress of learners and help learners develop skills on how to answer questions and take away examination phobia which is common among students. Too much workload on the teachers incapacitates them to monitor students' progress. Most students turn out to be careless in their work neglecting the specific need of a student, thus influencing the performance of the subject. Number of lessons a teacher is allocated influences a teacher's workload. The teachers service commission's (TSC) directive to head teachers that the minimum number of lessons a teacher should teach is 27 per week, has a direct impact on teachers. A large workload causes the teacher to be less efficient in planning and evaluating learners thus affecting performance.

Complaints about the big teaching load of teachers have been reported by ward, Penny and Read (2006). There are usually major differences in teacher workloads according to

school size, type and location as well as subject areas. The most common reasons for low teaching loads are small schools, overcrowded curricula with too many specialized teachers, insufficient class rooms and a predominance of single subject teachers. Private primary schools often have strong incentives to expand classes in order to maximize fee income (Bennell, 2004). If, however, the financial payoff to teachers for teaching extra classes is not increased sufficiently, then this can result in lower motivation.

Although the ministry of Education has stipulated specific teaching times (to start from 8.00 a.m to 12.30 p.m., then from 2.00 pm to 4.00 pm), in some schools, lessons have been created at additional slots (6.00 and 6.40 a.m, then 1.00 to 1.40 pm, and 8.00 to 8.40 p.m.) fore core subjects(Musasia, Nakhanu & Wekesa, 2012; Oundo, Nyaga & Kamoyo, 2013). More lessons are created on Saturdays between 8.00 a.m and 12.30 pm, and on Sunday from 2pm to 5pm. The form three and four are also retained in school during the holidays for more lessons. On the other hand, it is a matter of common knowledge that everyone can succeed in learning, if he or she devotes enough time to it (Makori and Onderi 2014). The time necessary to learn depends on the teaching done by the teacher, and also on the student's aptitude and competence. Reviewed literature showed how teacher work load affects efficiency of teaching. This study sought to find out how really lesson allocation influences academic performance of secondary school students in physics in Bureti Sub County, Kericho County.

2.4.3 Teacher Experience

You (2009) describe experience as a long period of practice over a period of ten years, or more, an individual who is skilled takes in developing an activity, or mastering a

performance. Madsen and Cassidy (2005) claim that research findings have shown that experienced teachers are more critical in their classroom teaching than pre-service teachers. Learners find their course materials given by experienced teachers interesting and meaningful. They find that explanations and activities given in class by this category of teachers are clear.

Teachers work within hierarchies in institutions that place highly visible constraints upon their professional discretion (Hawthorne, 1992). Teacher's efforts which make a difference in the students' achievement are influenced by the school administration. Clotfelter et al. (2007) performed a longitudinal analysis of a 10-year administrative data set from North Carolina and concluded that teacher experience had positive impact on student mathematics achievement. Klecker (2008), in his research paper entitled 'Teacher quality of eight-grade math achievement,' presented at the annual meeting of mid-south Educational Research Association, argued that the eighth-grade students who were taught by teachers with 20 and above years of experience had the highest average scale scores. This shows that experienced and committed teachers tend to be more precise in their teaching hence taking shorter time to covers syllabus than inexperienced teachers who take more time in explaining one concept using more words.

Teachers play a crucial role in the learning of pupils. They are the agents of social changes, facilitators of desirable learning, counselors of learners, consultant and resource persons, researchers and evaluator and manager of the teaching-learning situation. With these crucial roles, teachers really need to be competent. The theoretical content and pedagogical content knowledge of the teacher, the ways in which the teacher delivers

instruction, and the teacher's attitudes toward science have been shown to have an impact on student learning and achievement (Ware, 1992)

A competent teacher has knowledge of sequences of topics that help students build understanding of new concepts or skills (AAPT, 1988). These concepts or skills are built beginning with knowledge the student brings to the classroom. Sequencing choices are often supported by findings within physics education research. The teacher also knows the learners well. This includes knowledge of ideas that students bring into the classroom (not necessarily wrong ideas) and difficulties that they might have constructing concepts or interpreting physics language that might differ from every language. Though majority of teachers are trained, there is still an urgent need to improve teacher's quality in respective schools and subjects. "effective teachers are reflective practitioners who amplify the qualities of learning to inspire students and continuously critique the impact of their teaching colleagues and the school community" (Groove, 2005) quoted by Omosa (2009).

Rosenshine & Furst (1971), surveyed literature on teacher effectiveness and generalized that teacher achievement level is related to student achievement. He noted that effective teacher education programme should integrate certain teacher behavior which is highly associated with student achievement. The teacher's behavior includes conduct, preparation, language and presentation of the subject matter, and that of an effective curriculum implementation. This involves knowledge of multiple methods or activity sequences that leads to successful student learning of a specific concept or process skill. The teacher should be able to employ a variety of concrete and abstract representations

and experimental procedures to appeal to the variety of ways students learn. The teacher should always encourage students to arrive at an answer by reasoning rather than by memorization and recall.

Again competent teacher should possess a clear understanding of how to assess and evaluate the learning process (AAPT, 1988). This includes the ability to employ different methods to assess, both formatively and summative, student's conceptual understanding, acquisition of reasoning and problem solving skills, and science process skills. An equally important aspect of assessment is to enable students to self-assess their own work and that of their group, and to encourage and respond to constructive feedback. The ability to carry out this level of reflection is powerful tool to enhance conceptual understanding. It is important to note from the onset that effective implementation of any curriculum depends on teachers' competence and variety of other variables as well. However, teachers' competence remains the most central variable of the curriculum implementation.

The literature reviewed suggests that experience as one characteristics of teacher's preparedness affects academic achievement. This study was carried out to find how experience influences academic performance of secondary school students in physics in Bureti Sub County, Kericho County.

2.5 Team Teaching

Team teaching involves a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age learn. Teachers together set goals for

a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results. They share insights, argue with one another, and perhaps even challenge students to decide which approach is better. Little (1990) examined prominent forms of collegial relations—assistance, sharing and joint work. Joint work is a strong version of collegiality that shifts teaching from the individualistic to the collective, breaking down the barriers of privacy and leading towards new kinds of teaching (Abell, 2000)

Co-teaching has become more prevalent in high schools as a way to foster inclusion of special needs learners (Friend & Cook, 2007). An increasing number of high school science classes are being team taught by a general education and a special education teacher. Many high schools are offering inclusive Biology, Chemistry, Geosystems, and Physics classes (Grumbine & Alden, 2006).

This trend toward team-taught science classes is complicated by: (1) science teachers' lack of training or experience with the special education population (Grumbine & Alden, 2006); and (2) special education teachers' lack of knowledge/ experience in the teaching of science content. While specific statistics are not available on the number of special education teachers "highly qualified" in science content, science has traditionally been an area that experiences teacher shortages (U.S. Department of Education, 2002). The result is that more and more school systems are forced, by necessity, to team a special education teacher who has little science background with a science teacher who has little special education background to teach inclusive classes containing large numbers of students with special needs. The resulting team is often sharply divided in terms of expertise, with the potential for friction, conflict, and, most importantly, less than desirable student outcomes, both in terms of classroom performance and high stakes standardized testing.

There are many commonalities between successful approaches for teaching science and meeting the needs of special education students, which can become the foundation for a good co-teaching relationship (Austin, 2001).

Good science teaching involves considerable hands-on opportunities (e.g., labs and demonstrations) which are ideal for teaching most students with special needs (Steele, 2007). Students seem to be particularly fascinated by many of the standard lab exercises in science (e.g., magnets, pendulums, chemical experiments, microscope work). This eagerness to explore can be exploited as a learning opportunity in a well-managed science classroom. Other commonalities between science and special education include an emphasis on movement/transitions, cooperative learning (during labs and classroom activities), mnemonics and vocabulary. In short, many of the successful strategies employed by skilled science teachers are also utilized by experienced special education teachers and vice versa. It is important, therefore, for administrators (or whoever makes the teaming assignments) to make the process transparent and inclusive, so that all parties have a role in the assignment process (Murawski, 2005).

Teams can be single-discipline, interdisciplinary, or school-within-a-school teams that meet with a common set of students over an extended period of time. New teachers may be paired with veteran teachers. Innovations are encouraged, and modifications in class size, location, and time are permitted. Different personalities, voices, values, and approaches spark interest, keep attention, and prevent boredom. Welch et al. (1995, 1999) noted that teaching terminologies of collaboration are often exchanged and used synonymously. For example, terms like co-teaching (Cook & Friend, 1996; Walther-

Thomas et al., 1996; Roth & Tobin, 2001), cooperative teaching (Bauwen & Hourcade, 1995) and team teaching (Welch & Sheridan, 1995; Sandholtz, 2000) refer to a similar instructional delivery system. Professional development activities must provide regular and frequent opportunities for both individual and collegial reflection on classroom and institutional practice (National Research Council, 1996).

Working as a team, teachers model respect for differences, interdependence, and conflict-resolution skills. Team members together set the course goals and content, select common materials such as texts and films, and develop tests and final examinations for all students. They set the sequence of topics and supplemental materials. They also give their own interpretations of the materials and use their own teaching styles. The greater the agreement on common objectives and interests, the more likely that teaching will be interdependent and coordinated.

Team teaching is, in fact, a typical element of primary school level education (Golner & Powell, 1992; Williamson, 1993), but has less frequently been implemented at the secondary school level. Perhaps this is due to traditional departmental barriers (McKenna, 1989) that have often made collaborative teaching difficult, or even impossible. Snyder (1992) stated that collaboration is, indeed, a problematic relationship, which is also about collegiality and professional sharing; similarly, Lytle and Fecho (1991) observed that collaborative cultures take time to develop, require trust and mutual understanding, and are derived from day-to-day interaction as well as long-term relationships of participants. In school restructuring, teacher isolation has been identified as the most powerful impediment to implementing reform (Lieberman, 1995); and little

change will indeed occur in schools unless teachers constantly observe, help and interact with one another (Barth, 1990).

Students do not all learn at the same rate. Periods of equal length are not appropriate for all learning situations. Educators are no longer dealing primarily with top-down transmission of the tried and true by the mature and experienced teacher to the young, immature, and inexperienced pupil in the single-subject classroom. Schools are moving toward the inclusion of another whole dimension of learning: the lateral transmission to every sentient member of society of what has just been discovered, invented, created, manufactured, or marketed. For this, team members with different areas of expertise are invaluable. Of course, team teaching is not the only answer to all problems plaguing teachers, students, and administrators. It requires planning, skilled management, willingness to risk change and even failure, humility, open-mindedness, imagination, and creativity. But the results are worth it.

The team cuts teaching burdens and boosts morale. The presence of another teacher reduces student-teacher personality problems. In an emergency one team member can attend to the problem while the class goes on. Sharing in decision-making bolsters self-confidence. As teachers see the quality of teaching and learning improve, their self-esteem and happiness grow. This aids in recruiting and keeping faculty. However, it needs to be asked why collaboration has been largely ignored in schools? First, in many schools, opportunities for collaboration among teachers are limited and communication tends to be informal and infrequent, even though teachers believe their teaching could be improved by working with colleagues (Little, 1990; Corcoran, 1998).

Team teaching makes more demands on time and energy. Members must arrange mutually agreeable times for planning and evaluation. Discussions can be draining and group decisions take longer. Rethinking the courses to accommodate the team-teaching method is often inconvenient. The dominant school structure continues to emphasize teacher autonomy rather than collaboration; for many years, schools have expected teachers to teach students independently without assistance from others (Lortie, 1975).

Opposition may also come from students, parents, and administrators who may resist change of any sort. Some students flourish in a highly structured environment that favors repetition. Some are confused by conflicting opinions. Too much variety may hinder habit formation. Salaries may have to reflect the additional responsibilities undertaken by team members. Team leaders may need some form of bonus. Such costs could be met by enlarging some class sizes. Nonprofessional staff members could take over some responsibilities. All things being considered team teaching so enhances the quality of learning that it is sure to spread widely in the future.

According to Munyoki (2013), team building aims at boosting team's morale and willingness to perform/deliver. A team is a highly communicative group of people with different backgrounds, skills and abilities, with a common purpose e.g to achieve certain grade in school. It is important to have teams in schools due to concern about performance, concern about tapping from one another for people have different experiences, raise one another's morale, for love, belongingness and sharing of emotions and feelings (Munyoki 2013).

Team members must work together to be effective; likewise cooperation is needed among all the teams that make up the whole organization. High level managers need to integrate all these groups into one collaborative group. To do this, managers often rely heavily on team building for both individual teams and large groups. Team building encourages team members to examine how they work together, identify their weaknesses and develop more effective ways of cooperating. The goal of team building is to make the teams more effective (Newstrom 2011). Stakeholders need to embrace harmonious working relationship in order to realize good performance in national exams hence professionals need to join school BOMs to work hand in hand with the principals (Mang'awa, 2013). Success in school will only be realized when stakeholders are working together instead of opposing each other. Success comes from cooperation between teachers, parents, students and BOM (Yator, 2011). There is need for parents, teachers and stakeholders to work as a team to foster academic standards (Weyimi, 2011).

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to find out how team teaching influences academic performance of secondary school students in physics in Bureti Sub County, Kericho.

2.6 Challenges faced by teachers of physics

School institutions remain a preparatory ground to empower and certify the requirement for human development. The teacher is faced with the challenges of educating, socializing, empowering and certifying students, but with the help of good teaching atmosphere (Fafunwa, 2004; Farrant, 2004; Wasagu, 2009). By implication, the task of a teacher, which includes sustaining education system, do not rest on his or her professional competency alone, but on the entire features of the school climate (Loukas, 2007). Research has shown the relationship of school climate as a factors influencing success or failure of education to teachers and students (Adesina 2011; Anderson, Hamilton & Hattie 2004).

School Facilities Maintenance Task Force (Szuba, 2003) established that educators are faced today with growing challenge of maintaining the nation's education facilities at the same time they are held accountable for student achievement. Schneider (2002) noted that many of the public schools in America had documented widespread physical facilities deficiencies that had an effect on teaching and learning process. According to Building Educational Success Together (Best, 2005) report implementing policies that resulted in high quality, high performing, well designed and maintained school facilities had a direct impact on the teaching and learning process. Effective facilities contributed to the success of every school in United States. Earthman (2002) noted that school

facilities had an impact on teacher's effectiveness and student's performance. A number of researches in America have shown that school systems particularly those in urban and high poverty areas are plagued with decaying buildings that threaten the health safety and learning opportunities of students.

Ahawo (2009) noted in her study in public mixed days schools in Kisumu East district on the importance of a well-equipped laboratory to enhance performance in science subjects, which are compulsory for every Kenyan student at Kenya Certificate of Secondary Education examination. She noted that most laboratories in the district were ill equipped because of insufficient funds and high cost of laboratory equipment. This affected students' performance negatively since the students did not have many practical lessons and some students were meeting some apparatus for the first time in the national examinations. Mobegi (2007) suggests that the question of equipment demands that schools should possess not only what is necessary but also what is modern and up to date if good quality of work must be done. Resources for teaching Physics are not adequate, which affects performance in Physics and also its enrolment (Nderitu, 2011).

During the Examinations; questions that are not friendly to learners with cerebral palsy are set (Waundo, 2010). From the findings in Israel and also reported in United Kingdom by (Kalle, 2004), reported that; physics in Junior High School is often taught by teachers who lack expert knowledge and who have little enthusiasm for the subject, quality of teaching and learning is lowered. In such situations, teachers who lack confidence and familiarity fall back on didactic methods of teaching that increase students' reluctance to

enroll in Physics. We clearly need to make the curriculum as relevant and as motivating to the students as possible, but as (Rose, 2003) has already noted, without lively teachers, with the time and inclination to teach in a stimulating manner, few students will become switched on to physics (Rose, 2003). Otieno (2009) noted that teaching effectiveness has been identified as the most significant variable of student achievement. Teacher motivation or remuneration, mastery of content interpersonal skills and choice of teaching method influence teaching effectiveness. However, Otieno, (2009) outlined limitations of lecture methods which include; encouraging retention of facts and making the learner passive agent in learning.

SMASSE (1998) encourages physics teachers to teach through hands on activities. Other methods used in teaching physics are; question and answer method, teacher demonstration, project work method, field work method, class experiment, discussion method, problem solving, and discovery method among others. Like Henry Edward Armstrong's 1970's who was a strong supporter of heuristic science teaching methods. This study therefore sought to find out how challenges faced by teachers of physics influence academic performance of secondary school students in physics in Bureti Sub County, Kericho County.

2.7 Researches in the recent past

Onah and Ugwu (2010) carried out a study on the factors in relation to effects on performance. In school physics were teacher qualification, gender, laboratory facilities and resources, school location and interest of students. They found that school location

and interest of students had no significant effects on performance in physics while performance in physics at this level depended on sex (gender), teacher qualification and laboratory facilities. However, this study never considered other teacher preparedness like teacher experience and team work. The current study therefore considers incorporations of all these other factors.

Mbaabu, et al (2011) carried out a study on factors influencing secondary school students 'attitude towards the study of physics. The study aimed at investigating the factors that were considered to influence students' attitude towards the study of Physics in secondary schools in Imenti South District, Kenya. The factors under consideration were perceived adequacy of physics laboratory equipment, perceived teacher competence, the influence of calculations in the physics curriculum and sex differences in students' attitude.

They recommended among other things that teachers teaching physics and mathematics should work in consultation with each other so as to help the students in appreciating the role of mathematics in physics and girls should be helped to interact with ladies who have excelled in physics so as to boost their attitude towards physics. This study recommended for teachers teaching physics and mathematics to work in consultation with each other so as to help the students in appreciating the role of mathematics in physics .Another recent research done was by Teresa (2014) on factors affecting coverage of syllabus coverage in secondary schools in Kenya. The study identified the effects of teachers' strike, planning, school resources and time management on coverage of syllabus in secondary schools.

Again, the study never considered teachers' characteristics whether they have an influence on coverage of syllabus in secondary school.

Kuria (2014) did a study on factors influencing enrolment and performance in physics among secondary schools in Gatundu District, Kenya. The study found out that availability and proper use of teaching and learning resources improved achievement in physics. But the study never commented on the care and use of the same resources like maintenance. Teacher characteristic like teacher's preparedness on how to use these resources were also not discussed. This study therefore sought to find out how challenges faced by teachers of physics influence academic performance of secondary school students in physics in Bureti Sub County, Kericho.

2.8 Summary of the reviewed literature

The purpose of this study was to determine teacher factors influencing academic performance of secondary school students in physics. Literature reviewed was from studies done in other parts of the world, as well as Kenya and Africa. These literatures touched on the main factors affecting performance of secondary schools students in physics i.e. teacher's commitment in physics syllabus coverage, teacher's preparedness, team teaching and challenges faced by teachers of physics.

It was evident that teaching approach that a teacher adopts is one factor that may affect student's achievement. Teacher's commitment has a great influence on syllabus coverage. Student's poor performance in physics globally is basically due to lack of involving the students in the teaching learning activities, right from the beginning of any

new concepts to be taught, lack of qualified teachers as well as experiences in teaching and/or insufficiency of materials in laboratories. On teacher's qualification, it was found that student achievement is most enhanced when teachers are fully trained and have completed a teacher education programme. It was also found out that the number of lessons a teacher is allocated influences performance. Working in teams spreads responsibility, encourages creativity, deepens friendships, and builds community among teachers. Teachers complement one another. They share insights, propose new approaches, and challenge assumptions. They learn new perspectives and insights, techniques and values from watching one another. Students enter into conversations between them as they debate, disagree with premises or conclusions, raise new questions, and point out consequences. Effective teaching include: preparation, implementation, and evaluation. It was also established that educators are faced today with growing challenge of maintaining the nation's education facilities at the same time they are held accountable for student achievement.

After reviewing all these literature across the world and even in Kenya, it is evident that there are factors which influence the academic performance of secondary school students in physics. However none of these studies has looked at the teacher factors influencing academic performance of secondary school students in physics in Bureti Sub County, Kericho County, Kenya. The researcher intended to fill this knowledge gap.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was used in the study. This includes area of study, research design, selection of respondents, data collection methods, data quality control and ethical issues and data analysis. This chapter presents the procedures and the methods the researcher employed to carry out the study. The section comprises of the research design, study population, sampling procedures, data collecting instruments, validity and reliability of the instruments, methods of data collection and analytical techniques.

3.2 Area of Study

The research was carried out in secondary schools in Bureti Sub-County, Kericho County in the Republic of Kenya. The sub County is one of the six Sub Counties in Kericho County. The Sub County shares common borders with other sub counties: Londiani, Kipkelion, Belgut, Kericho and Ainamoi. The sub county had 52 secondary schools all of which were examination centers: out of these, 44 were public and 8 private schools. Out of 44 public schools 17 were Girls' boarding schools while 20 were Boys boarding and 7 were mixed secondary schools. This specific sub County was chosen because its performance was below average and there was need to find out the cause.

3.3 Research Design

This is the plan for carrying out the research study. Kombo and Tromp (2006), observes that a research design is the glue that holds all the elements in the research design as the scheme, outline or plan that is used to generate answers to the research problems. The fundamental objectives of research design are to develop a set of methods and procedures that will answer the research questions.

The design for this study was a descriptive survey design. The design involved fact finding, formulation of important principles of knowledge and solution to significant problems. According to Mugenda and Mugenda (1999), descriptive survey is a method of collecting information by interviewing or administering questionnaires to a sample of individuals. This was appropriate because the study involved collecting data in order to be analyzed and used to answer questions about the correct status of the study. The study aimed at collecting information from respondents on their opinion in relation to factors influencing academic performance of secondary schools students in physics. In using this study the researcher constructed questions that would solicit the desired information. The researcher Identified individuals who would be involved in the survey, identified the means by which the research would be conducted and summarized the data in such a way that it provided the designed descriptive information.

3.4 Target Population

This is one of the crucial stages in research. Target population is what Mugenda and Mugenda (1999) called absolute population where the researcher would ideally

generalize the results of the study. A population may be virtually any size, and may cover almost any geographical area. The population that a researcher ideally would like to generalize to is referred to as target population. The population that the researcher realistically can select from is referred to as the available population. Mugenda & Mugenda(1999) defines a population as a complete set of individuals, cases or objects with some common characteristics. The sample population for this study was drawn from secondary schools in Bureti Sub County. The Sub County was chosen because it was one of those Sub Counties in which the performance of physics had been below average as indicated in the KCSE 2010 – 2014 Bureti Sub County results analysis (Table 1.1).

The researcher targeted secondary schools of Bureti Sub County in Kericho County. The targeted population was physics teachers in Bureti Sub County secondary schools in which physics as a subject was being taught. The sub county had 52 secondary schools 44 of which were public while 8 were private. The sample of respondents comprised of one physics teacher in the selected secondary schools. A list from the sub county education office showed that the sub county had 44 public schools, out of which 17 were girls' schools, 20 were boys' schools and seven were public mixed schools. The Sub County had 8 private schools in which five were mixed; two were girls' schools and one was boys' school. The study researched on factors influencing academic performance of secondary schools students in physics. The researcher used physics teachers in various schools selected. Therefore the target population was believed to have relevant information for the current study that enabled the researcher to achieve the research objectives.

This information is represented in table as shown below

Table 3.1: Distribution of schools in Bureti Sub County

Category	Type of school			
	Boys	Girls	mixed	total
Public	20	17	7	44
Private	1	2	5	8
Total	21	19	12	52

Source: DEO's office Bureti Sub County

3.5 Sampling Design and Procedure

This section describes the sample, sampling techniques used in the sample selection and the methods used in determining the sample size that was used in the study. Basically a sample is considered to be a sub group of the population. There are many available sampling techniques. Sampling techniques allow a researcher to collect the data from a sub group rather than the whole population and therefore reduce the amount of data to fit the purpose of the study. A good sample should possess the properties of the population from which it has been drawn. A sample is representative when it is an accurate, proportional representation of the population under the study (Kombo and Tromp, 2006). For reliable conclusions to be drawn from research, samples for research must be representative of the target population. There are various ways of achieving to varying degrees, random samples often being regarded as the most reliable and statistically correct, but also as the most costly, compared to quota samples that select respondents to match certain criteria.

A sample of thirty-nine schools were selected from all fifty two secondary schools in Bureti district by stratified random sampling to ensure that secondary schools were categorized as mixed day, mixed day and boarding , girls' boarding and boys' boarding schools represented in the sample. Heiman (2002), stratified random sampling is a sampling technique that involves the identification of important subgroups in a particular population. In this case the subgroups were mixed schools, boys' schools and girls' schools. To allocate the sample size in the three strata that is mixed schools, boys' schools and girls' schools the researcher used equal allocation method.

In equal allocation Orodho (2009) states that subjects are selected in equal numbers per stratum. Thus in the three strata, three quarter of the sample was selected from each stratum. Three quarter of 21 in boys' school was 16, three quarter of 19 in Girls' school was 14 and three quarter of 12 in mixed school was 9. All these totaled up to thirty-nine schools constituted seventy five percent of all the fifty two secondary schools in the Sub County. Selection of this sample was based on Ary's (1972) suggestion that in descriptive research one can select from ten percent and above of the accessible population. According to Mugenda and Mugenda (1999), in stratified random sampling subjects are selected in such a way that the existing subgroups in the population are more or less reproduced in the sample. It is advantageous in that it ensures inclusion in the sample of sub groups which otherwise would be omitted entirely by other sampling design because of their small numbers. Thus if on average the sample chosen is a random one, it will have the same composition and characteristics as the universe.

To obtain the study sample according to Gay cited in Mugenda and Mugenda (1999), for co relational research 30 cases or more are required; for descriptive studies 10% of the accessible population is enough and for experimental studies, at least 30cases are required per group. However, according to Brown (1998), the sample size depends on the situation and on the statistic that is involved. Physics teachers were used as respondents in which one physic teacher was selected randomly in schools which had many physics teachers but purposive sampling was used in cases where a school was having only one physics teacher. The main factors considered in determining the sample size is the need to keep it manageable enough to derive data at an affordable cost in terms of time, finance and human resources. Therefore this study selected thirty-nine out of fifty two secondary schools that offered physics in KCSE in 2014. The selected schools represented 75 percent of the secondary schools in the sub-county that offered physics in 2014.

3.6 Data Collection Instruments

In this study, questionnaires and document analysis were used as the main tools for collecting data. The selections of these tools were guided by the nature of data to be collected, the time available as well as the objectives of the study.

3.6.1 Questionnaires

Questionnaires are thought to be appropriate in enabling the researcher gather a large amount of data from many subjects economically. Questionnaires were used since the study was concerned with variables that cannot be directly observed such as views,

opinions, perceptions and feelings of the respondents. Such information was best collected through questionnaires. Mugenda and Mugenda (1999) said that a questionnaire is a collection of written questions which are usually answered in order to obtain information from the participants. The purpose of using the questionnaire was to enable the respondents to answer questions freely as they fill the questionnaire forms. This instrument was necessary for this study as the teachers had time to provide well taught information. There were questionnaires for physics teachers containing open-ended and closed items. These aimed at getting information about factors influencing performance of secondary schools students in physics. For the closed statements in the questionnaire, each statement was rated on a Likert type of scale. Likert scales can have between three and nine choices. The teachers were required to tick in the box corresponding to their option. The questionnaire was based on objectives of the study and research questions; they sought to get background information on gender, teacher's commitment in syllabus coverage, teacher's preparedness, team teaching and challenges faced by teachers of physics. The questionnaire used is shown in appendix A.

3.6.2 Document analysis Guide

Document analysis is the systematic examination of instructional document such as syllabi, daily occurrence books, lessons recovery book, schemes of works and termly examination evaluation results in order to identify instructional needs and challenges and describe an instructional activity. Quantitative data was collected from KNEC KCSE booklets and school records for the Bureti Sub County. The KNEC results were also obtained from the Sub County Examination and statistics office and used to categorize

the schools according to gender and type (public or private) for the purpose of sampling. The document analysis guide used is shown in appendix B.

3.7 Validity and Reliability of the Instruments

Validity refers to the degree to which an instrument measures what it is supposed to measure. According to Kothari (1985), validity can be determined by using a panel of persons who shall judge how well the instruments meet the standard. The validity of the research instruments was established by requesting the supervisors and colleagues from the department of curriculum, instruction and educational media in Moi University to proof read and provide necessary advice. The supervisor and colleagues were further requested to rate the ability of each item in the instruments to measure and elicit anticipated data. They were also requested to if the required data was meaningfully analyzed in relation to the stated research questions and objectives. The validity of the instruments further verified during the piloting of the study in Bureti Sub County. Suggestion and advice offered by the students and teachers were used by the researcher to modify the instruments to make them more adaptable in the study.

Reliability is the measure of degree to which an instrument yields consistent results or data after the repeated trials (Mugenda & Mugenda 1999). To ensure reliability of the instrument, the first draft of the instrument was presented to a few colleagues for their opinion and suggestions on the format, content and other related issues. Their opinions and suggestions were incorporated on the final draft of the instrument. The researcher used the test-retest technique to measure reliability of the research instruments by following procedure: research instruments were administered to two schools with

identical characteristics to those in the study and which were not involved during the actual study. The answered questionnaires were then manually scored. The research instruments were administered to the same group of respondents after a period of two weeks and responses scored manually. Pearson's Product Moment Correlation Coefficient (PPMCC) formula was used for the test-retest to compute a relation coefficient in order to establish the reliability of the research instruments. A Pearson's Product Moment Correlation Coefficient of 0.92 was obtained which indicated that this was a reliable data. Mugenda and Mugenda(1999) indicated that in research a study reliability coefficient can be computed to indicate how reliable data is. A coefficient of 0.8 or more would imply that there was a high reliable data.

3.8 Methods of data collection

The researcher obtained a research permit from the National Commission for Science, Technology and Innovation from (NACOSTI). Permission from Bureti Sub County education office and staffing office was sought to visit schools and contact teachers. The 39 schools were visited, by researcher who then informed teachers about the study and made more arrangements for the researcher's visit. The researcher then re-visited the schools and administered the questionnaires to the physics teachers.

Kombo and Thromp (2006) defined data collection as the process of gathering of specific information to prove or refute some facts. The researcher conducted a comprehensive reconnaissance of the study area to assess its viability to the study. In collecting data, the researcher visited the sampled schools to administer the questionnaires. It was of much importance for the ethical considerations to be considered by the researcher while

carrying out this study. This research was done using descriptive survey design. As a result permission was sought from Bureti Sub County Education officer (SCEO) to allow the researcher to use already existing data from the education offices. To get information about different type of schools in the sub county, their number and population of the students, the researcher sought assistance from Sub-County Quality Assurance Officer (SCQASO) and the Sub County Statistics Officer (SCSO). The principals of the sampled secondary schools were notified of the intentions to conduct the study and the intended dates through a letter seeking permission and assistance from the respective physics teachers. Letters were also sent to physics teachers through the principals informing them about the same assistance in answering questionnaires.

3.9 Data Analysis and presentation

Upon successful collection of data, the researcher organized the raw data systematically in frequency tables, the corrections where necessary was made. Thereafter the data code sheet was prepared and coded in SPSS computer software. In this study, collected data was analyzed using descriptive techniques (frequencies, means, modes and percentages). Data was presented in frequency tables.

3.10 Ethical considerations

While this research will contribute to knowledge on how teacher's factors can influence academic performance, it maintained utmost confidentiality about respondents. The researcher explained to the respondents the importance of data to be collected. They were informed that all data in the questionnaires would be treated with confidentiality. Where

necessary, clarification was made on the items of the questionnaire. The respondents were not required to indicate their names on the questionnaire and the researcher ensured that all respondents were given free will to participate and contribute voluntarily to the study. Besides, the researcher ensured that relevant authorities inclusive of National Commission for Science, Technology and innovation and Bureti Sub County staffing office were consulted and permission granted. Due explanations were given to the respondents before commencement of data collection.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION OF THE FINDINGS

4.1 Introduction

This chapter presents data analysis based on the objectives of this study which include:

- a) To assess the influence of teacher's commitment in physics syllabus coverage on academic performance among secondary schools students in Bureti Sub County, Kericho County.
 - a) To determine the influence of teachers' preparedness on students' academic performance in physics in Bureti Sub County, Kericho County.
 - b) To assess the influence of team teaching on academic performance of secondary school students in physics in Bureti Sub County, Kericho County.
 - c) To identify challenges encountered by teachers of physics that influence academic performance of secondary school students in physics secondary schools in Bureti Sub County, Kericho County.

This chapter deals with data analysis, interpretation and discussion of data collected from thirty nine physics teachers in Bureti Sub County. Its flow assumes the sequence in which designated objectives of the study were ordered. Students' performances in KCSE for the last years were obtained from Bureti Sub County Quality Assurance Office. Primary data was also obtained using questionnaires. Data analysis and report findings were done using descriptive statistics. The chapter is presented under the following: Bio data of the

respondents, teacher's effort in syllabus coverage, teacher's preparedness, team teaching and challenges faced by teachers of physics.

4.2 Bio data

4.2.1 Gender of the respondents

The researcher distributed 41 questionnaires to all 39 physics teachers out of this 2 were used in piloting. All questionnaires were brought back which consisted of 39 physics teachers out of whom 22 were male while 17 were female. Table 4.1 shows the distribution of the sampled teachers.

Table 4.1 Gender of the respondents

Gender	Frequency	Percent
Males	22	56.4
Females	17	43.6
Total	39	100.0

Source: Author (2014)

From the data collected as shown in the Table 4.1, the research findings showed that majority of the respondents in most secondary schools in Bureti Sub County were male teachers. This made up to 56.4% of the total population issued with questionnaires. The remaining 43.6% of the same population were females.

4.3 Teachers' commitment in physics syllabus coverage

The first objective in this study was to assess the influence of teacher's commitment in physics syllabus on academic performance of secondary school students in physics in Bureti Sub County, Kericho County. Teachers were asked to give their opinion on how teacher's commitment influences syllabus coverage, students' confidence and students' performance in examination. The responses they gave are reflected in Table 4.2

Table 4.2 Teachers' commitment

Teachers' commitment	Frequency	Percent
Syllabus coverage	10	25.7
Students' confidence	17	43.5
Students' performance	12	30.7
Total	39	100.0

Source: Researcher (2014)

From Table 4.2, the research data showed that majority of physics teachers in most secondary schools in Bureti Sub County build students' confidence in answering questions when syllabus has been cleared. This has created positive performance of physics in the recent years in some secondary schools in Bureti Sub County. This was supported by 43.5% of the total population issued with questionnaires to fill. Only 25.7% of the same population indicated that teachers rush through topics towards the end of the year especially in form four in an effort to clear syllabus. The remaining population showed that students pass highly when syllabus is cleared on time than when it is not. This view was expressed by 30.7% of the total teachers of physics

Physics text books from form one to four were studied and it was established that form one to three text books had ten topics each while form four had eleven topics. But the number of lessons allocated to each topic is different in all the four classes. Form one and two had four lessons per week, two of which were combined to form a double lesson which is normally meant for practical lessons. In form three and four, there are five lessons in each class per week and still two lessons are combined to form double lessons used for practical lesson. When all lessons were combined, it was realized that there were 132,132,165 and 138 lessons in form one, two three and four respectively in a year.

From the analysis of records provided in schools visited by the researcher about term dates, it was established that first term of the year had 14 weeks, second term had 14 weeks and third term had 11 weeks making a total of 39 weeks in a year. This corresponds to 156,156,195 and 195 lessons available in form one, two, three and four physics syllabus book. Therefore, there was enough time for covering syllabus but other factors come in to slow down physics syllabus coverage.

This concurs with report by KNEC (2006) that, generally, coverage of the syllabus may influence performance. KNEC (2000) reports indicate that candidates failed in questions whose answers depended on how well experiments outlined in the syllabus were covered. Dunkin (1978); Barr and Dreeben (1983) said that there is a strong relationship between content coverage and student achievement. Variation in student achievement can be explained, at least in part by variations in content coverage (Englert, 1983 & Wyne & stuck, 1982). Good, Grouws, & Beckerman (1978) found that the coverage of curriculum

materials, the number of textbooks pages covered by different fourth-grade mathematics classes was significantly related to achievement.

Timely syllabus coverage is critical to learners as pertains to performance in end of secondary school course examinations (KCSE) and hence choice of which higher education institutions to join by KCSE graduates (Amadalo, Shikuku & Wasike, 2012). Efforts to improve performance in education are pulled back by woes such as inadequate coverage of syllabus, mismanagement and wastage of quality teaching time by teachers, perception that education no longer guarantees employment and lack of efforts by parents, teachers, leaders and community to create an enabling learning environment (Njoroge, 2012). Kaner (1998) noted that resource time if well managed can lead to timely syllabus coverage. Poor time management practices and lack of control of time wastage leads to low achievement of set objectives (Kaner, 1998).

Therefore, completion of syllabus improves performance of secondary school students in physics in Bureti Sub County, Kericho County, Kenya. From the three issues asked, as shown in the table 4.2, it was established that syllabus coverage is the least (25.7%) affected by teachers' commitment in teaching physics while students' confidence (43.5%) is highly affected by teacher's commitment followed by students' performance (30.7%). Therefore teacher's commitment in physics builds students' confidence in answering questions when syllabus has been cleared in Bureti Sub County, Kericho County, Kenya. Attainment of timely coverage of syllabus is mainly achieved through teachers and hence secondary schools should consider putting more emphasis on teachers' commitment in physics syllabus coverage.

4.3 Teacher's preparedness

The second research objective in this study entailed teacher's preparedness in the teaching of physics. Preparedness of teachers were measured using teacher qualification, physics lessons allocated, teaching experience, number of years in the current school and professional document prepared by the physics teacher (schemes of work). Teachers were asked to give how teacher's qualification, number of lessons missed and not missed, teaching experience, no of years in the same station and preparation of professional documents affects teacher's preparedness. The responses they gave are reflected in Table 4.3

4.3.1 Qualifications of teachers

Table 4.3 Qualifications

Qualifications	Frequency	Percent
Diploma	8	20.5
Degree	20	51.3
Masters	11	28.2
Total	39	100.0

Source: Author (2014)

Table 4.3 above illustrates the qualifications obtained by teachers of physics in various secondary schools in Bureti Sub County. Majority of the teachers teaching physics in most of these schools are degree holders, this was responded by 51.3% of the total population issued with questionnaires to fill. From the same population given questionnaires, 28.2% teachers of physics showed that they hold Masters of Science

degree in physics, a qualification that best defines physics performance in secondary schools. Only 20.5% of the remaining population showed that they hold diploma in science, physics and mathematics specialization. This shows that teachers of physics in Bureti Sub County were qualified and had low or no impact on the academic performance of secondary school students in physics in the Sub County.

According to Ango (1990), students' poor performance in physics globally is basically due to lack of involving students in the teaching and learning activities right from the beginning of any new concept to be taught, lack of qualified teachers as well as experiences in teaching and unavailability and/or insufficiency of materials in the laboratories. Usually the performance in physics is among the worst among all the subjects at the school level (KNEC, 2003, 2006). Studies show that secondary school science teachers' education correlates positively with their learners' achievement in matriculation examinations. Boyd, Grossman, Lankford, Loeb & Wyckoff (2006) found that student achievement is most enhanced when teachers are fully certified, and have completed a teacher education programme. Harris & Sass (2006) examined how teacher qualifications and in service training affected student achievement in Florida. He found out that teacher course work in both subject taught and pedagogy contributes to positive education outcomes. Teacher qualification was thought to be a contributing factor to performance of secondary school students in physics. It was found out that physics was being taught by qualified teachers, so other factors were causing low performance in the Sub County.

According to the above researches done in the past, it was found out that the case is not true for Bureti Sub County, Kericho County, Kenya since all the teachers used in the study were qualified. Therefore what contributed to low performance in the Bureti Sub County could be other factors like; physics lessons allocated, teaching experience, number of years in the current school and professional document prepared by the physics teacher (schemes of work).

4.3.2. Physics lessons missed by teachers

Table 4.4 Physics lessons missed

Physics lessons missed	Frequency	Percent
missed	11	28.2
Not missed	28	71.8
Total	39	100.0

Source: Author (2014)

In Table 4.4, the research data shows that majority (28) of the teachers did not miss physics lessons despite most of them teaching other subjects like Mathematics. This was responded by 71.8% of the total population issued with questionnaires to fill. The research study further showed that few of the teachers (11) miss physics lessons in their schools because of an unavoidable challenges like other official duties and sickness. This was responded by 28.2% of the total population issued with questionnaires to fill. For those teachers who missed physics lessons, the research findings showed that they recovered this by attending remedial classes so that they could not lag behind in syllabus coverage. In lesson recovery, it was found out that only some schools used these kinds of

records. In those schools which used lessons recovery records, not all missed lessons were recovered and the recovered lessons were not indicated the time when they were recovered. It was also established that lessons missed due to issues caused by teachers were recovered but lessons missed due to schools functions were not recovered in most cases.

The teacher is one of the most important inputs into the education system and therefore, efficient management and utilization of teachers is crucial to the quality of learning outcomes (MOEST, 2005). The number of lessons a teacher misses and even allocated influences performance (Wabuke et al, 2013). This was not the case in Bureti Sub County, Kericho County since a larger percentage of teachers (71.8%) did not missed their lesson. This was not the case in Bureti Sub County, Kericho County since a larger percentage of teachers (71.8%) did not missed their lesson. Therefore what contributed to low academic performance of secondary schools students in Physics in the Sub County could be other factors like; teaching experience, number of years in the current school and professional document prepared by the physics teacher (schemes of work).

4.3.3 Teaching experience

Table 4.5 Teaching experience

Teaching experience	Frequency	Percent
Below 5 years	14	35.9
6-10 years	12	30.8
11-20 years	8	20.5
21 years and above	5	12.8
Total	39	100.0

Source: Author (2014)

Table 4.5 illustrates the findings from the data collected. The researcher found out that most teachers had served in teachers' service commission for a period less than 5 years. This was responded by 35.9% of the total population. Only 30.8% of the same population showed that they had served in the school teaching physics for period not more than 10 years but less than 6 years. Some of the physics teachers that made a total of 20.5% of the population issued with questionnaires to fill had served in the teaching profession for a period between 11 to 20 years. Only 12.8% indicated that they had served in teachers' service commission for a period more than 21 years.

You (2009) describe experience as a long period of practice over a period of ten years, or more, an individual who is skilled takes in developing an activity, or mastering a performance. Madsen and Cassidy (2005) claim that research findings have shown that experienced teachers are more critical in their class room teaching than pre- service teachers. Clotfelter et al. (2007) performed longitudinal analysis of a 10-year

administrative data set from North Carolina and concluded that teacher experience had positive impact on student mathematics achievement. Klecker (2008), in his research paper entitled 'Teacher quality of eight grade math achievement,' argued that the eight-grade students who were taught by teachers with 20 and above years of experience had the highest average score. Thus, teacher's age and experience in teaching affect how teacher teaches and therefore also students' attitudes towards the course and students' achievements in the course (cited from Cruickshank et al., 1995).

This shows that experienced and committed teachers tend to be more precise in their teaching hence producing good performance than inexperienced teachers. From this assertion, those who had over ten years teaching experience composed of 33.3%. Therefore, low academic performance of secondary schools students in Physics in the Bureti Sub County had been due to a higher number of inexperienced teachers in the teaching of physics.

4.3.4 Number of years in the current school

Table 4.6 Number of years in the current school

Duration	Frequency	Percent
One year	22	56.4
Two years	10	25.6
Three years and above	7	17.9
Total	39	100.0

Source: Author (2014)

From the data collected, the research findings shown in Table 4.6 indicate that most teachers had taught in the same school for a period of not more than one year. The researcher found out that for the four years students had been in school, they had

interacted with this group of teachers for only one year which may not be enough to produce good performance due to change over of teachers and adaptation. This was indicated by 56.4% of the total population issued with questionnaires to fill. The research findings further revealed that the second group of teachers had taught in the same school for a period of not less than one year but not more than two years, therefore they had established physics performance in the same school for that teaching duration. It means that for the four years students had been in secondary school, those teachers had taught the students for half the period, either forms one and two or two and three or three and four. This was responded by 25.6% of the total population issued with questionnaires to fill. However 17.6 % of the same population issued with questionnaires to fill indicates that they had served in the same institution for a period of more than three years.

This group of teachers had taught students for at least three years they had been in school. Significantly, the long serving physics teachers in the same school showed a lot of commitment and determination towards making students develop right and positive attitude towards science subject particularly physics. These teachers had encouraged most students to embrace the physics subject with positive approach and therefore most students could excel.

Teacher turnover rates can be high, particularly in schools serving low income, non-white, and low achieving students populations. Nationally, about 30 percent of new teachers leave the profession within five years, and the turnover rate is high in poverty schools as compared to more affluent one (Ingersoll, 2001).

Teacher turnover rates also tend to be higher in urban and low performing schools (Hanushek, Kain, and Rivkin, 1999). Guin (2004) studies 66 elementary schools in a large urban district to look at a relationship between school-level turnover and the proportion of students meeting standard on statewide assessments in reading and math. Pearson correlations are significant and negative, indicating that schools with higher turnover have lower achievement. These results are consistent with other correlational evidence (Boyd et al., 2005; Hanushek, Kain, and Rivkin, 1999). Such evidence, though, is not necessarily indicative of a causal relationship; a third factor (e.g. poverty, working conditions, or poor school leadership) may cause both low achievement and higher turnover. Teachers leaving may cause low achievement and low achievement may cause teachers to leave. It was established therefore that this turnover has caused many physics teachers to hardly stay in a school for more than one year and this has contributed to low performance in secondary school students in physics in Bureti Sub County.

4.3.5 Schemes of work prepared by teachers of physics

Table 4.7 Schemes of work

Schemes of work	Frequency	Percent
Schemes preparation	7	17.9
Lessons recovery	23	59.0
Timely schemes	9	23.1
Total	39	100.0

From the data collected as shown on Table 4.7, the research findings showed that teaching is done as per the schemes prepared by teachers. This was agreed on by 17.9% of the total population issued with questionnaires to fill. As reported earlier in this study majority of physics teachers have strongly agreed that lessons missed were always recovered on time by attending to remedial classes they set aside for missed lessons as shown on remedial records studied. Remedial classes provided other attractive opportunities to make available appropriate and effective curricula for students with special needs and interest. They address different study skills and learning techniques. This has boosted the general performance of physics in general. This was responded by 59.0% of the total population issued with questionnaires to fill. Only 23.1% of the remaining population indicated that, schemes were written and handed in to the Head of Departments at the right time. Schemes of work were written and handed in time to the Head of Department as shown by the date indicated on these documents. However, it was established that not all record of work were updated and updated record of work were not at par with the schemes which were to be captured in the remarks column. Record of work for teachers teaching different streams were not at par still.

A scheme of work refers to guidelines designed to make the teaching of a subject more manageable. It provides supporting information about planning and teaching the subject and form documentary evidence about course delivery. Schemes of work are likened to a road map of a journey. The scheme of work ensures that the syllabus is completed or covered within a given period of time. It helps teachers to provide continuity in the lessons and sequence in the learning in an orderly manner. Schemes of work provide supporting information about planning and teaching the subject and form documentary

evidence about course delivery which helps to guide subject delivery. Unplanned course delivery adds to workloads, and as planning tools, schemes of work can also be seen as way makers for course delivery by determining the prerequisites for moving (Grimmitt, 2000). Kafu,(2003) and Twoli,(2006) stated that lesson planning gives teachers confidence in curriculum instructional processes. They argued that during planning, teachers selects the relevant content to the lesson to be taught and organizes it in a functional way to help achieve the instructional objectives.

A scheme of work is a key planning document for all teachers. It is a personal plan to cover the syllabus, taking into account variables like time allocation, pupils' ability levels, and pupils' previous experience, available resources and putting content in a logical sequence. Other considerations involved in planning the scheme of work include scope to be covered, sequence, objectives, learning activities, learning resource and evaluation. Armstrong, et al. (2009), indicates that in order to provide quality learning experience for all students, lessons must be well planned and prepared effectively. They describe responsibilities and characteristics of the 21st century teacher as: matching instructions and programmes to learner's characteristics, conducting task analysis to identify appropriate beginning point, and a logical sequence of instruction, specifying learner's intentions. Indimuli et al. (2009) claimed that teacher preparation is vital for effective teaching and learning process. A scheme of work is therefore a vital document in boosting academic performance in physics students. It was ascertained that scheme preparation was not to the expected, only 17.9%, meaning that its application is also affected. Therefore, this inadequate preparation of schemes has caused low academic performance of secondary schools students in physics in the Bureti Sub County.

4.4 Teacher rating on teamwork

The third objective was to assess whether team teaching influences academic performance of secondary school students in physics in Bureti Sub County, Kericho County.

Teachers were asked to rate their opinion on the use of team work and their responses are shown in Table 4.8,

Table 4.8 Teacher rating on team teaching

Teacher rating	Frequency	Percent
Fairly	18	46.2
Average	14	35.9
Poor	7	17.9
Total	39	100.0

Source: Author (2014)

Table 4.8; show how physics teachers were rated. Secondary school physics were given questionnaires based on their performance of physics on team work. Majority of the physics teachers embraced teamwork and was ranked fairly, this was supported by 46.2% of the total population issued with questionnaires to fill. Only 35.9% of the same population ranked teachers on average rate. A smaller percentage of 17.9% were rated poor showed that physics teachers did not encourage teamwork. This is because the lesson allocation to some extent could not satisfy them. Though team work was identified in schemes of work preparation as shown on the cover page, not much team teaching was

done in many schools because teachers teaching different streams were found not to be at par in record of work except in form four classes where team teaching was mostly emphasized.

Team teaching is, in fact, a typical element of primary school level education (Golner & Powell, 1992; Williamson, 1993), but has less frequently been implemented at the secondary school level. Perhaps this is due to traditional departmental barriers (McKenna, 1989) that have often made collaborative teaching difficult, or even impossible. Snyder (1992) stated that collaboration is, indeed, a problematic relationship, which is also about collegiality and professional sharing; similarly, Lytle and Fecho (1991) observed that collaborative cultures take time to develop, require trust and mutual understanding, and are derived from day-to-day interaction as well as long-term relationships of participants. In school restructuring, teacher isolation has been identified as the most powerful impediment to implementing reform (Lieberman, 1995); and little change will indeed occur in schools unless teachers constantly observe, help and interact with one another (Barth, 1990).

Team members must work together to be effective; likewise cooperation is needed among all the teams that make up the whole organization. High level managers need to integrate all these groups into one collaborative group. To do this, managers often rely heavily on team building for both individual teams and large groups. Team building encourages team members to examine how they work together, identify their weaknesses and develop more effective ways of cooperating. The goal of team building is to make the teams more effective (Newstrom 2011).

Tam teaching was believed to be useful in bringing good performance as suggested by earlier researchers. However, according to this study, team teaching was rated by the respondents as fairly done and not good. This means that low academic performance of secondary schools students in physics in the Sub County was low since team teaching was not done as expected.

4.5 Challenges faced by teachers of physics

The fourth objective was to identify challenges faced by teachers of physics which influence academic performance of secondary school students in physics. When teachers were asked through open ended questionnaires about any challenge facing them, they gave the following; many schools do not have enough serviced physics apparatus. Most of these apparatus do not give accurate information of readings. It was established that many schools performed experiments in groups and not per individual student as done during examinations.

Attitude building by teachers always takes a very long time to be considered by students. This was clearly shown by the number years teachers have been in the current station. However, in an effort to clear the syllabus on time, the form one work is always bulky and too wide which consumes a lot of time to finish. This information was obtained from the document analysis done. There were some schools which lacked some important items for practical which could be improvised. This has slowed down the syllabus coverage in physics. Most students in these schools did not attend physics lessons due to absenteeism caused by factors including school fees. Some teachers felt that motivation by their respective schools was too low and wanted to be motivated more. It was found

out that teachers of physics encountered a number of challenges. Some schools had few physics apparatus which force teachers to group students during experiments or perform experiments in shifts which consume time. From laboratory reports it was established that many schools only purchased physics apparatus at the end of the year when students were doing their KCSE. From the daily occurrence book and school roll call, it was established that most students miss lessons due to absenteeism caused by factors like school fees, indiscipline cases. This therefore contributes to low performance in secondary schools students in physics.

School institutions remain a preparatory ground to empower and certify the requirement for human development. The teacher is faced with the challenges of educating, socializing, empowering and certifying students, but with the help of good teaching atmosphere (Fafunwa, 2004; Farrant, 2004; Wasagu, 2009). Earthman (2002) noted that school facilities had an impact on teacher's effectiveness and student's performance. This information confirms that, physics teachers are faced with a number of challenges and have contributed to the low academic performance of secondary school students in physics in Bureti Sub County.

4.6 Summary

1. Teacher's commitment in physics syllabus coverage influences completion of the physics syllabus. Therefore less committed teachers in their work slowdown completion of syllabus and lowers academic performance of secondary school students in physics while fully committed teacher fast track completion of syllabus hence improving academic performance. Therefore teacher's

commitment influences academic performance of secondary schools in Bureti Sub County, Kericho County

2. There is teacher's preparedness like unqualified teachers, missed lessons, inexperienced teachers, less number of years in the teaching stations, improper use and lack of professional documents produce poor results in secondary schools students in physics.
3. Poor or lack of team work in physics contributes to low academic performance in secondary schools students in physics in Bureti Sub County, Kericho County.
4. Inadequate and unmaintained physics apparatus, lack of teacher motivation and student absenteeism contribute to low performance in secondary schools students in physics.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary, conclusion and recommendations of the research study. The summary, conclusion and recommendations are based on information and research findings obtained after data analysis and presented in the previous chapters. The findings obtained from data analysis make a direct contribution to knowledge..

5.2 Summary of the research findings

This study aimed at establishing factors influencing academic performance of secondary school students in secondary in physics in Bureti Sub County Kericho County Kenya. The objectives were: to assess the influence of teacher's commitment in physics syllabus coverage on academic performance of secondary school students in physics; to determine how teachers' preparedness in the teaching of physics influences academic performance of secondary school students in physics; to assess whether team teaching influences academic performance of secondary school students in physics; to identify the challenges faced by teachers of physics which influences academic performance of secondary school students in physics in Bureti Sub County, Kericho County.

5.2.1 Findings from teacher's commitment in physics syllabus coverage

The first objective was to assess the influence of teacher's commitment in physics syllabus coverage on academic performance of secondary school students in physics. It

was found out that teacher commitment in syllabus completion builds physics students' confidence in answering questions. It was also found out that students pass highly when syllabus is cleared than when it is not cleared.

5.2.2 Findings from teacher's preparedness

The second objective was to determine teachers' preparedness and its influence on academic performance of secondary school students in physics. This objective was measured using teacher's qualification, physics lessons missed, teacher's experience, number of years in the current school and the quality scheme of work prepared by the teacher. It was found out that qualification of teachers and number of physics lessons missed did not affect academic performance of secondary schools students in physics. However, many teachers were found to be inexperienced since they had stayed under the teachers' service commission for only less than five years. Therefore, teacher's experience, number of years in the current school and the quality scheme of work prepared by the teacher were found to be influencing academic performance of students in secondary schools.

5.2.3 The influence of team teaching on academic performance

The third objective was to assess whether team teaching influences academic performance of secondary school students in physics in Bureti Sub County. It was found out that team teaching among physics teachers in Bureti secondary schools was not up to the expectation. This is because many teachers rated team teaching as fair and not good.

Document of analysis also showed that schemes of work (professional document) was prepared as a team but teaching was mostly done by individual teachers.

5.2.4 Challenges faced by physics teachers

The fourth objective was to identify challenges faced by teachers of physics which influence academic performance of secondary school students in physics. When physics teachers were asked whether there is any challenge they face while teaching physics, this is what many of them answered; many teachers said that their schools did not have enough serviced physics apparatus. Most of these apparatus did not give accurate information. Some schools only purchased physics apparatus when students were almost doing K.C.S.E which made many schools not to have enough physics apparatus. Other challenges raised by teachers is that students performed experiments in groups and not individualized as the case in Kenya National Examination Council (K.C.S.E). It was also established that some physics students missed physics lessons because they were sent for school fees while others were sent away because of indiscipline cases. It was also found that teachers did not perform well as expected when they felt that they were not appreciated or motivated like their colleagues in other schools.

5.3 Conclusions

Majority of teachers in Bureti Sub County are male, few are females. It shows that there is no gender balance in the teaching fraternity of physics. From the findings, it can be concluded that teacher's commitment in physics syllabus coverage, teacher's commitment which includes teacher's experience, number of years in the current school

and scheme of work prepared by the teacher, team teaching and challenges faced by physics teachers affect academic performance of secondary school students in physics in Bureti Sub County, Kericho County, Kenya.

5.4 Recommendations

1. Secondary schools should ensure that syllabus is cleared early to allow time for revision. Sub County Quality Assurance and standard officer (SCQASO) should frequently visit schools to monitor and give guidance on the teaching as per the regulations of the Ministry of Education and the teachers Service Commission.
2. It should be ensured that teachers employed under the Board of Management (BOM) are qualified. Frequent turn-over of teachers by schools should be minimized in order to reduce time taken by learners to adjust to new teachers. Schools should strengthen internal quality assurance and standard officer to ensure that lessons are not missed and if missed they should be recovered at appropriate time to avoid usage of student's private study time. Yet team teaching should be encouraged between and among teachers.
3. The government of Kenya, through Ministry of Education should put in place measures to manage current science laboratory equipment which are meant to make learning in most secondary schools more efficient and effective. Science apparatus for physics should be well maintained in order to produce accurate results during physics practical. Schools through physics teachers should encourage individualistic experiments just like in KCSE and minimize use of group work in experiments.

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APPENDICES

APPENDIX A: PHYSICS TEACHER'S QUESTIONNAIRE

PHYSICS TEACHER'S QUESTIONNAIRE

TEACHER FACTORS INFLUENCING PERFORMANCE OF SECONDARY SCHOOL STUDENTS IN PHYSICS, A STUDY OF BURETI SUB COUNTY, KERICHO COUNTY-KENYA

Introduction

- ✓ Responses given in this questionnaire are held with confidentiality. Do not write your name anywhere in this questionnaire.
 - ✓ Please fill in the blank spaces as guided in the questions.
1. Please tick age bracket indicating the number of years you have been in the teaching profession.

Below 5
 6-10
 11-20
 21 and above.
 2. Please specify your qualification.

Untrained Teacher
 Diploma
 Degree
 Masters.
 3. Please specify your position in this school

Principal
 D/principal
 Physics teacher
 Head of Department
 4. Please tick the number of years you have been in the current school

1 years
 2. years
 3.years
 4. years
 5 years and Above

5. What is category of your school

Private mixed secondary school private boys' secondary school private girls

secondary school public mixed secondary school public boys' secondary school

public Girls' secondary school

6. What is the gender of the respondent?

Male

Female

7. How many physics classes are in upper classes?

1

2.

3

4.

5 And Above.

8. How many physics teachers are in your school?

1

2.

3.

4.

5 And Above.

9. (i) Do you sometimes miss physics lessons? 1 yes 2. No

(ii) If yes in (i) above then how do you recover? Specify

.....

10. **GUIDE LINES FOR FILLING PARTS, I,II,III,IV,V & VI**

Please fill the spaces provide in each part using the given scales above

Strongly Disagree =1, Disagree=2, Neutral=3, Agree= 4, strongly agree =5

PART I: TEACHER'S EFFORT

The following questions are meant to identify the contribution of teacher's commitment to coverage of physics syllabus in secondary school

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Completion of syllabus depends so much on teacher's commitment					
Teacher's effort in coverage of the syllabus builds student's confidence in answering questions					
Hard working teachers complete syllabus early					
Teachers' effort helps in completing syllabus early					
Teacher's effort affects students' performance					

PART II (a): TEACHER PREPARATION

To what extent do you agree with the following statements?

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Teachers prepare schemes of work to be used in teaching					
Teaching is done per the schemes prepared by teachers					
Schemes are written and handed in by teachers at the right time					
Teachers rush through topics towards the end of the year especially in form four.					

(b) TEACHER'S EXPERIENCE

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Teachers who are more experienced produce good performance					
Students like experienced teachers teaching them as compared to inexperienced					

teachers					
Not all teachers who have stayed in the field of teaching are experienced					
Content is delivered appropriately by experienced teachers					

© TEACHER QUALIFICATION

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Trained teachers are competent in their teaching					
Qualified teachers teach and post good results in their students					
The level of qualification influences delivery of content					

(d) LESSON ALLOCATION

How satisfied are you with the following.

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Physics teachers are generally allocated many lessons					
Teachers teaching one subject candidate class produce good results					
Schools which operate without a clear timetable, examination and weekends periods are likely to delay completion of syllabus					

PART III: TEAM WORK

How do you rate your subject teachers in terms of?

Question	Very highly Qualified	Highly Qualified	Fairly Qualified	Poor Qualified
Team teaching				
Teaching support				
Syllabus coverage				
Lesson attendance				

11. What is your view about physics syllabus coverage in secondary school in regards to students' academic performance?

.....

.....

.....

12. What are the challenges you face as a teacher of physics in your current school?

.....

.....

.....

APPENDIX B: DOCUMENT ANALYSIS GUIDE

i) Distribution of schools in Bureti Sub County

Category	Type of school			
	Boys	Girls	Mixed	Total
Public				
Private				
Total				

ii) Number of physics topics according to syllabus book

Form	F1	F2	F3	F4
Number				

iii) Term dates for secondary schools, to know number of weeks in each term

Term	Opening	Closing	No of weeks
Term one			
Term two			
Term three			

iv) Number of physics lessons in school time table per week in each class

Form	No of double lessons	No of single lessons	Total
Form 1			
Form 2			
Form 3			
Form 4			

- v) Number of Form 1-4 lessons required to complete secondary school physics syllabus as from syllabus book

Form	Form 1	Form 2	Form 3	Form 4
No of lessons				

- vi) Fill the table given below according to the questions asked

Professional record	Availability (Yes/No)	Who prepares (principal/H.O.D/ teacher/specify)	When is it prepared (specify the week)	Comments (filled/ blank/or any other)
1. Schemes of work				
2. Record of work covered				
3. Lesson recovery book				
4. Any other				

APPENDIX C: BURETI MAP



APPENDIX D: KENYA MAP



KERICHO COUNTY